

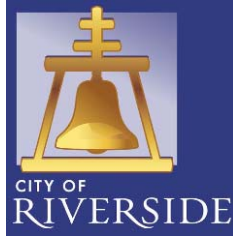


2005



URBAN WATER MANAGEMENT PLAN

December 2005



City of Riverside

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Mission Statement:

Riverside Public Utilities is committed to the highest quality water and electric services at the lowest possible rates to benefit the community.

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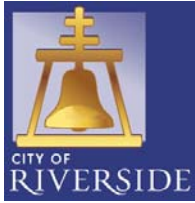
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December 2005



City of Riverside Public Utilities Department



Urban Water Management Plan

Contact Sheet

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The Water supplier is a: Municipality

The Water supplier is a: Retailer

Utility services provided by the water supplier include: Water, Recycled Water,
Electricity

Is This Agency a Bureau of Reclamation Contractor? No

Is This Agency a State Water Project Contractor? No



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Acronyms and Abbreviations

°F	Degrees Fahrenheit
ACOE	[United States] Army Corps of Engineers
AF	Acre-foot or acre-feet
AFY	Acre-feet per year
AHHG	Area of Historic High Groundwater
AL	Action Level
AMCL	Alternate Maximum Contaminant Level
amsl	Above mean sea level
ASDWA	Association of State Drinking Water Administrators
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	Below ground surface
BMP	Best Management Practice
CCF	One hundred cubic feet (100 ft ³)
CCL	Contaminant Candidate List
CCR	Consumer Confidence Report
cfs	cubic feet per second
CII	Commercial, Industrial and Institutional
CIP	Capital Improvement Program
COR	City of Riverside
CUWCC	California Urban Water Conservation Council
DBCP	Dibromochloropropane
DHHS	[U.S.] Department of Health and Human Services
DHS	Department of Health Services (California)
DMM	Demand Management Measure
DSM	Demand Side Management
DU	Dwelling Unit
DWR	[California] Department of Water Resources
EMWD	Eastern Municipal Water District
EIR	Environmental Impact Report
EOC	Emergency Operations Center
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
GCC	Gage Canal Company
GEP	Gage Exchange Program
GFT	General Fund Transfer

Acronyms and Abbreviations

GMP	Groundwater Management Plan
GWR	Groundwater Rule
gpm	Gallons per minute
HECW	High Efficiency Clothes Washer
HGCWD	Home Gardens County Water District
HVW	Hidden Valley Wetlands
IRP	Integrated Resources Plan
JMM	James M. Montgomery [Consulting Engineers, Inc.], now MWH
LAFCO	[Riverside County] Local Agency Formation Commission
LGF	Local Generating Facilities
MCL	Maximum Contaminant Level
MDD	Maximum Day Demand
MGD	Million gallons per day
MMM	Multimedia Mitigation
MOU	Memorandum of Understanding
MtBE	Methyl tertiary Butyl Ether
MWD	Metropolitan Water District [of Southern California]
MWH	Montgomery-Watson-Harza Engineering Consultants
NDWAC	National Drinking Water Advisory Council
NPDES	National Pollution Discharge Elimination System
NHSRC	National Homeland Security Research Center
OCWD	Orange County Water District
OEHHA	Office of Environmental Health Hazard Assessment
PBC	Public Benefit Charge
PCE	Tetrachloroethylene
pCi/L	pico Curies per Liter
PHA	Public Health Assessments
PHG	Public Health Goal
PRP	Potentially Responsible Party
ppb	Parts per billion (micrograms per liter - µg/L)
PUD	[City of Riverside] Public Utilities Department
PWS	Public Water System
RCF	[WMWD] Riverside-Corona Feeder [Water Transmission main]
RERC	Riverside Energy Resource Center

Acronyms and Abbreviations

RHWCo	Riverside Highland Water Company
RIX	[City of San Bernardino and City of Colton] Rapid Infiltration extraction Tertiary Wastewater Treatment Plant.
RRWQCP	Riverside Regional Water Quality Control Plant
RPU	[City of] Riverside Public Utilities [Department]
SAIC	Science Applications International Corporation
SAWPA	Santa Ana Watershed Project Authority
SBVMWD	San Bernardino Valley Municipal Water District
SBVWCD	San Bernardino Valley Water Conservation District
SCAG	Southern California Association of Governments
SCADA	Supervisory Control and Data Acquisition (system)
SDWA	Safe Drinking Water Act
SMCL	Secondary Maximum Contaminant Level
SOI	Sphere of Influence
SWA	Source Water Assessment
SWAP	Source Water Protection
SWAPP	Source Water Assessment and Protection Plan
SWP	[California Department of Water Resources] State Water Project
SWPP	Source Water Protection Plan
SOI	Sphere of Influence
TCE	Trichloroethylene
TDS	Total Dissolved Solids
TMF	Technical, Managerial and Financial
TOU	Time of Use
UCR	University of California, Riverside
ULFT	Ultra-low Flush Toilet (ULFT)
USAWRA	Upper Santa Ana Water Resources Association
USGS	United States Geological Survey
UST	Underground Storage Tank
UWMP	Urban Water Management Plan
WARN	Water Agency Response Network
WaterISAC	Water Information Sharing and Analysis Center
WHP	Wellhead Protection
WMWD	Western Municipal Water District [of Riverside County]
WSCP	Water Supply Contingency Plan
WSDM	Water Surplus and Drought Management
WSWG	Water Security Working Group
WUE	Water Use Efficiency

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1 AGENCY COORDINATION

1.1 Coordination with Appropriate Agencies

The City of Riverside Public Utilities (RPU) Department coordinated the preparation of this Urban Water Management Plan (UWMP) as required under the UWMP Act (Act). Appendix A.1 is the most recent version of the Act.

1.1.1 Public Participation

RPU held a series of public meetings to discuss this UWMP. Appendix A.2 represents the notices published in advance of each public hearing. A draft UWMP was submitted to the Water Committee of the Board of Public Utilities (Board) for review and comments, and was discussed at that committee's meeting held on November 16, 2005. Legal public notices for each meeting were published in the local newspapers, were posted at City offices, the main branch of the City's library and on City's web site. Copies of the draft UWMP were available at RPU's offices and via download from the City's website. The draft UWMP was revised to reflect comments received from the Water Committee and other stakeholders. The draft Final UWMP was presented to the Board of Public Utilities at a public hearing on December 2, 2005, and to the City Council on December 20, 2005.

A copy of the UWMP adopted by the City Council will be forwarded to the California Department of Water Resources and other specified agencies as required by the Act. Appendix A.3 includes a list of the agencies to which copies of the adopted UWMP will be provided. A copy of the adopted UWMP will be posted online at: <http://www.riversidepublicutilities.com>.

1.1.2 Agency Coordination

RPU directly prepared this UWMP with input from consultants, public review, and planning documents prepared by local and regional planning agencies, water agencies, wastewater agencies, and regional water management agencies (Table 1.1-1). RPU staff coordinated the development of this UWMP with the City's Community Development Department (which includes the Planning Division, as well as the Building and Safety Division), and the Public Works Department. The City's Community Development Department provided data regarding annexations.

RPU completed a Water Master Plan in June 2005 that reviewed and forecasted reliable water supplies and demands for the City through 2025 based on population data provided by the Southern California Association of Governments (SCAG). Data from this study were utilized in this document.

Table 1.1-1
Coordination with Agencies

DWR UWMP Review Table 1 Coordination with Appropriate Agencies							
Check at least one box on each row	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not Involved / No Information
Other water suppliers							
Western Municipal Water District				X	X	X	
Water management agencies							
San Bernardino Valley Water Conservation District				X			
United States Geological Survey (USGS)				X			
Relevant public agencies							
City of Riverside - Planning Division		X		X	X	X	
City of Riverside Public Works Department (Wastewater)				X		X	
Riverside County Planning Department					X	X	
					X	X	
Relevant public agencies					X	X	

RPU is a member agency of the Western Municipal Water District (WMWD) of Riverside County, which in turn is a member agency of the Metropolitan Water District of Southern California (MWD). All water sources for the City are shared in common with certain other urban and agricultural interests in the area. RPU therefore included data in development of this plan from the following agencies:

- The Gage Canal Company (GCC),
- WMWD,
- Regents of the University of California, and
- Mutual Water Companies in which RPU owns shares.

RPU communicates water supply information to the public throughout the year. For example, RPU provides monthly water highlights one of its two monthly Board meetings. These water highlights include data related to daily water production and consumption, peak and average water consumption, and daily temperature and rainfall. RPU regularly encourages public water awareness and water conservation by maintaining a website [<http://www.riversideca.gov/utilities/bewaterwise/>] dedicated to water conservation and including various links to other conservation-related sites. RPU staff highlights conservation activities at public display booths several times during each year at various events.

1.2 Resource Maximization / Import Minimization Plan (i.e., Water Management Tools to maximize use of Local Resources)

RPU favors the use of local water resources, which are much cheaper, less energy intensive and more reliable than imported water. A key goal for the 2004-07 period,

adopted by the Board is to promote the efficient use of water within the City. Efforts to achieve this goal include, but are not limited to, the following:

- Rate structures to encourage efficiency
- Incentives for water efficiency
- Water and energy efficiency education programs and workshops, and
- A target water use reduction of 20% by RPU's top 10 customers

RPU is primarily dependent on local groundwater for water supplies and plans to meet future water demand from local groundwater and recycled water as much as possible. Sections 2.3 and 2.4 of this UWMP include a description of certain measures implemented to improve groundwater management planning and the reliability of local water supplies. Additional information regarding the measures to maximize the use of recycled water for non-potable purposes are in Section 5 of this UWMP.

RPU relies on many water management tools to maximize the use of local water resources thereby reducing the need for imported water.

The water management tools include the following:

- Groundwater treatment.
- Exchanging of potable water with non-potable water.
- Developing a Source Water Protection Plan.
- Developing a recycled and non-potable water reuse plan.
- Rehabilitating the Riverside Canal to enhance non-potable water use.
- Acquiring additional water rights to increase production from local basins.
- Participating in additional water conservation activities at the Seven Oaks Dam.

These management tools are elaborated upon in other sections of this UWMP.

1.3 UWMP Preparation

This UWMP was prepared by RPU staff, and reviewed by the Board of Public Utilities before being adopted by the City Council. Appendix A.4 shows the City Council resolution adopting the 2005 UWMP.

1.4 City and County Notification and Participation

RPU is a department within the City of Riverside. The citizens of both the City of Riverside and the County of Riverside were provided constructive notice of the proposed review and revision of the City's UWMP. Comments received have been incorporated into this final UWMP.

2. SERVICE AREA, WATER DEMANDS, AND SUPPLIES

2.1 Level of Planning

RPU is the municipally-owned utility that provides potable and recycled water at retail primarily within the City. The City is located within the Santa Ana River Valley approximately 60 miles east of Los Angeles and 100 miles north of San Diego. In 2005, there were about 78.5 square miles within the City limits (Appendix B.1). The primary source of potable water is groundwater from local basins. Some potable water is imported. RPU is a wholesale customer of the WMWD. The WMWD is a member agency of the MWD. Locally produced recycled water is used to meet some non-potable demand.

The California Water Code UWMP Act requires a 20-year projection (through 2025 for the 2005 UWMP). RPU chose to include projections through 2030 in line with other water agencies that are preparing water supply assessments (WSA) and written verifications. Extending the planning horizon of the UWMP through 2030 will allow RPU to utilize UWMP data for preparing a WSA (in accordance with Senate Bill 610) or written verification (Senate Bill 221) between 2006 and 2010 when the next UWMP is due.

2.2 Service Area

2.2.1 Water Service Area

The City began as an agricultural community in 1870. Land use within the City has consistently evolved from agricultural to urban use since 1940. Citrus was the first major industry in the City, although residential and commercial development has overtaken agriculture. Residential land use is the dominant land use within the City. Non-residential land uses include commercial and industrial development, schools, parks, and open space.

Appendix B.1 shows the potable water service area served by RPU. RPU's water service area totals about 74 square miles, of which about 69 square miles are within the City limits. The elevation of the water service area ranges from less than 700 feet to more than 1,700 feet above mean sea level.

Appendix B.1 also shows the areas within the City limits that are served by other water purveyors. Other potable water retailers within the City include WMWD (9 square miles), Eastern Municipal Water District (EMWD, 1 square mile), and the Riverside Highland Water Company (RHWCO, 0.25 square miles).

In 2004, RPU had about 62,000 water service connections, up from 58,538 in 2000.

2.2.2 General Plan 2025

In spring of 2005, the City held numerous public meetings to review the draft General Plan 2025 [<http://www.riversideca.gov/planning/genplan2025-2.htm>]. Appendix B.2 shows the proposed Land Use Policy Map under the draft General Plan 2025. The General Plan 2025 update anticipates a build-out population of 376,000, with approximately 38,100 new dwelling units (DUs), and 39.6 million square feet of new non-residential development within the City's northern and southern spheres of influence (SOI).

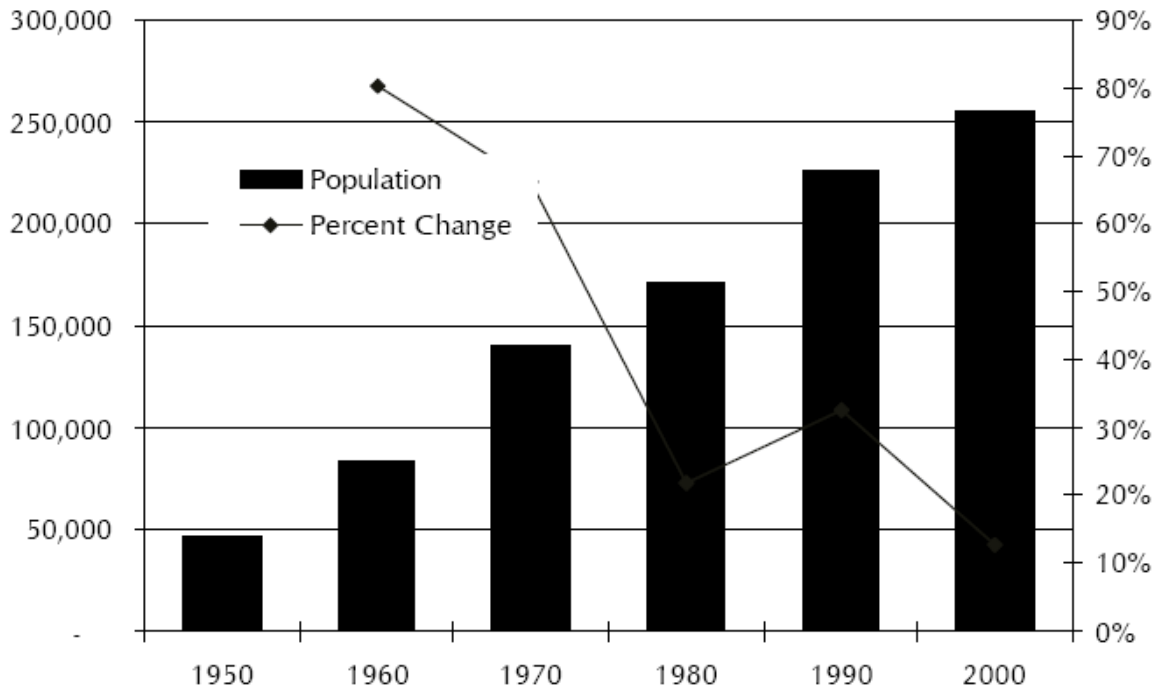
2.2.3 Annexations

Other factors that can potentially influence future population size include further annexations to the City, inter-agency adjustment of water service area boundaries, and Riverside County Local Agency Formation Commission (LAFCO) service boundary recommendations. In the past, the City has expanded its area through annexation. The most intensive expansion of the City occurred during the 1950 through 1970 period when the population tripled and land area increased from approximately 39.2 square miles to 71.5 square miles through annexations.

Appendix B.3 shows the areas being considered for possible annexation into the City and their respective annexation status as of September 2005. Some of the proposed annexations primarily to the north of the City, would fall within the RPU water service area, while others are within the service area of the WMWD.

2.2.4 Current and Projected Population

In 2004, the City's population was 283,247 with an annual growth rate of one percent (City of Riverside Development Department, 2005). A significant portion of the population includes students. There are four universities within the City, with a combined student population of about 40,000. Figure 2.2-1 shows the population growth for the period from 1950 through 2000. After the Second World War, the annual population growth rate was about 8%. In the recent past, the annual growth rate was influenced by economic factors such as recession, and annexations (Section 2.2-3) to the City.



Source: 2005 City of Riverside Draft General Plan 2025

Figure 2.2-1. City of Riverside Population Growth

The population within the City limits was 226,546 in 1990. In 2000, population within the RPU water service area increased to approximately 250,000 compared to a total City population of 259,738 (2000 census figures). The population within the City limits has increased by about 33,000 within the past decade, with a significant proportion being outside of RPU's water service area.

If the proposed draft General Plan 2025 land use policy is fully implemented, the population of the City could grow from approximately 274,000 in 2003 to approximately 353,397 in 2025 based on the Southern California Association of Governments (SCAG) projections that reflect regional and statewide growth trends (Table 2.2-1).

In 2004, RPU contracted with Montgomery-Watson-Harza (MWH) Americas Inc. as engineering consultants to update the Water Master Plan. MWH developed population projections as part of the contract (Table 2.2-1). The annual growth rate shown in Table 2.2-1 is on a compound basis over that of the preceding 5-year period. MWH (2005) obtained land use data from the City's Community Development Department (which includes the Planning Division). MWH relied on data provided by the SCAG to project the population of the service area based on land use. MWH (2005) used the population projections, land use data, aerial photography, and specific development information to project water demands for RPU's water service area through 2025. MWH estimated that the population within RPU's water service area could increase to 329,001 by 2030. Figure 2.2-2 shows the projected population growth and water demand as estimated by MWH.

Table 2.2-1
Projected City and Water Service Area Population

Year	Population			Water Demand (acre-feet/year)
	City of Riverside (COR) ²	RPU Water Service Area (WSA)	Annual Growth Rate	
2005	286,935	255,346	2.1%	77,529
2010	307,847	271,907	1.3%	84,254
2015	323,384	287,066	1.1%	89,494
2020	338,712	301,900	1.0%	93,828
2025	353,397	315,746	0.9%	97,410
2030	367,489	329,001	0.8%	101,499
Build-out ¹	376,000			

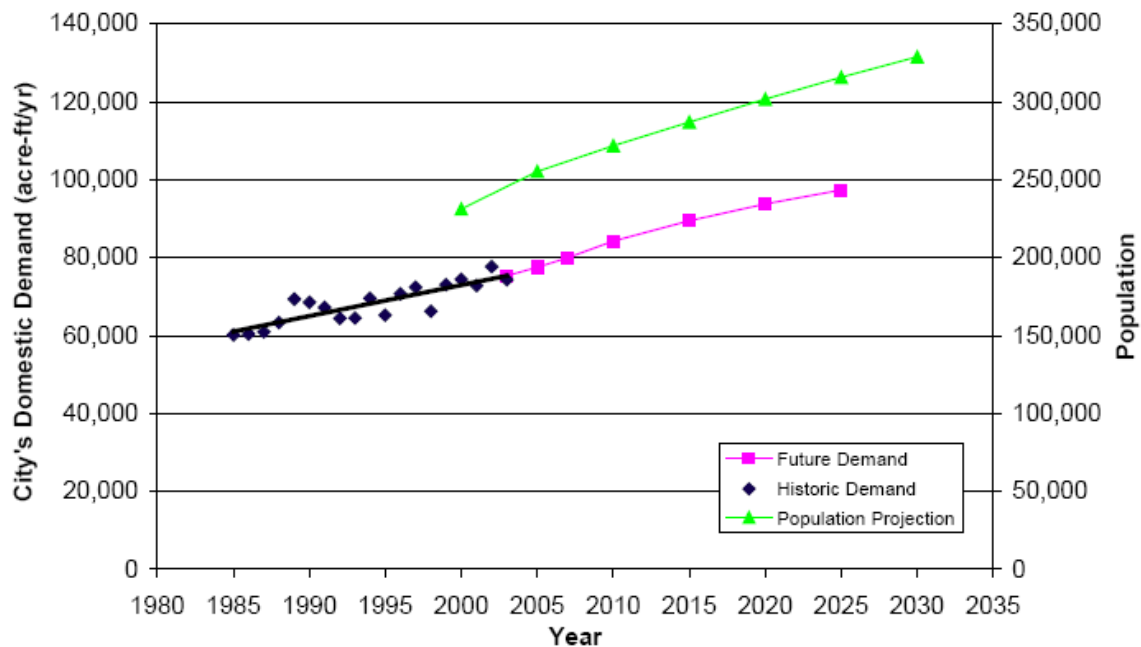
NOTES:

¹General Plan 2025 update anticipates a build-out population of 376,000 for COR.

Per capita water demand in 2025 used to estimate demand in 2030.

²Difference between populations in "COR" and "WSA" columns are the people served by Western Municipal Water District (WMWD) and other agencies.

Source: MWH (2005) City of Riverside Water Master Plan.



Source: Montgomery-Watson-Harza (2005). City of Riverside Water Master Plan.

Figure 2.2-2: Water Demand and Population Growth

2.2.5 Sources of Data

The projected population for RPU's water service area is listed in Table 2.2-2 based on sources of data identified earlier. The sources of data in other sections are identified in the respective section.

Table 2.2-2
Population – Current and Projected for Service Area

DWR UWMP Review Table 2 Population - Current and Projected						
	2005	2010	2015	2020	2025	2030
RPU Water Service Area Population	255,346	271,907	287,066	301,900	315,746	329,001

Source: 2005 RPU Water MasterPlan (MWH) based on data obtained from Southern California Association of Governments.

2.2.6 Climate

Climate is one of the primary factors that influence the demand for water within RPU's water service area. Climatic factors include precipitation, temperature, and evaporative demand. The City is located in the southwest arid area of the United States. The City's climate is characterized by warm to hot and dry summers, and mild winters. The average monthly climatological data for weather stations located within the City limits are tabulated in Tables 2.2-3.

Table 2.2-3
Monthly Average Climatological data for Riverside, UCR

DWR UWMP Review Table 3 Climate						
	January	February	March	April	May	June
Standard Average ETo	2.49	2.91	4.16	5.27	5.94	6.56
Average Rainfall	2.16	2.15	1.75	0.81	0.23	0.07
Average Temperature	54	55.49	57.46	61.41	65.9	71.35

DWR UWMP Review Table 3 (continued) Climate							
	July	August	September	October	November	December	Annual
Average ETo	7.22	6.92	5.35	4.05	2.94	2.56	56.37
Average Rainfall	0.04	0.12	0.26	0.32	0.93	1.23	10.07
Average Temperature	77.01	77.68	74.40	67.32	59.11	54.31	64.62

Data sources: 1948-2004

(1) ETo: CIMIS for station 44 UCR Riverside; <http://www.cimis.water.ca.gov/cimis/frontMonthlyReport.do>; 1985-2004

(2) Precipitation: Riverside Citrus Experimental Station; <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?carvrc>; 1948-2004

(3) Average Temperature: Riverside Citrus Experimental Station; <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?carvrc>; 1956-2004.

The hottest and driest period of the year is from July through September, when the average high temperature exceeds 90°F and demand for water is the greatest. The average monthly temperature ranges from 54°F in winter to about 78°F in summer. It is not unusual to have several consecutive days when the daily high temperature exceeds 100°F.

Annual average precipitation is about 10 inches. Most of the precipitation occurs during the period from November through April, when the demand for water is below average.

2.2.7 Other Demographic Factors

Demographic factors that can influence future water demand include land use, relative proportion of single-family residences to multi-family residences, population density, economic characteristics (e.g., income, employment rate), and the mix of customer types. These factors are discussed below.

Riverside is undergoing several demographic events simultaneously. As shown in Table 2.2-4, the population and per capita income are increasing and the population is ageing. The University of California, Riverside (UCR) is expected to absorb a disproportionately higher share of students because other campuses within the University of California system are constrained in growth. The ethnic composition of the City is also changing and the unemployment rate is decreasing. Many jobs are migrating inland from coastal areas to take advantage of the lower costs. The unemployment rate fell by 42% between 1994 and 2004. The mix of jobs within the City is also changing.

Table 2.2-4
Demographic Statistics

City of Riverside Demographics Statistics						
Year	Population	PerCapita Income \$	Median Age	Unemployment Rate	Commercial Construction # of Units	Residential construction # of Units
1994	244,191	\$ 14,528	29.4	10.6%	1,894	2,503
1995	247,800	\$ 14,751	31.0	9.9%	1,835	2,268
1996	243,421	\$ 12,497	31.3	9.1%	1,804	2,417
1997	241,630	\$ 12,567	31.6	7.8%	1,599	2,654
1998	250,799	\$ 13,481	31.8	7.0%	1,621	3,053
1999	254,300	\$ 14,093	32.0	6.2%	1,710	3,074
2000	259,738	\$ 13,825	32.2	5.3%	1,573	3,694
2001	262,335	\$ 14,241	32.4	5.2%	1,718	3,747
2002	265,700	\$ 13,687	31.6	6.5%	1,899	4,099
2003	274,100	\$ 14,137	32.1	6.8%	1,982	4,444
2004	277,030	\$ 14,928	30.0	6.2%	2,153	4,145
Change: 1994 to 2004	13%	3%	2%	-42%	14%	66%

Data source: Table 15 and Table 16 2003 & 2004 Comprehensive Annual Financial Reports, City of Riverside Finance Department

Improved water conservation, conversion of land use from irrigated agriculture to urban use, adoption of less water intensive landscaping, and higher marginal water rates may mitigate some of the effects of these demographic factors on per capita water demand. The median prices of homes continue to increase. Higher prices for homes may result in smaller lot sizes which would require less landscape irrigation. These factors, cumulatively, can affect the per capita demand for water.

2.3 Water Sources

2.3.1 Existing Water Supply Sources

RPU's sources of water include groundwater, imported water, and recycled water. Appendix B.4 represents a simplified schematic of the City's water system and the integration of the various water supply sources. RPU obtains most of its water from local groundwater basins – Bunker Hill (San Bernardino Basin Area), Riverside North and Riverside South (Appendix B.5).

The boundaries of the groundwater basins are similar to those defined in the 1969 Stipulated Judgment No. 78426, Western Municipal Water District of Riverside County, et al. versus East San Bernardino County Water District, et al, Superior Court of the State of California for Riverside County (1969 Judgment attached as Appendix B.6). The adjudicated status of the groundwater basins is discussed in Section 2.3-5.

RPU produces potable water from several wells in the Bunker Hill Basin, Riverside North Basin, and Riverside South Basin (Appendix B.5). RPU has wells in the Arlington Basin, but presently does not produce domestic water from that basin because of its poor quality.

RPU purchases small quantities of treated imported surface water from the WMWD, primarily to meet peak water demands within the higher elevations of the City's water service area during very hot summer days. During emergencies, e.g., major transmission main repairs, RPU sometimes purchases imported water from WMWD.

WMWD is a wholesale purchaser of imported water from the State Water Project (SWP) from the MWD. WMWD has contractual rights to imported water from MWD. Imported water is treated at the Mills Filtration Plant, in Riverside. RPU has a contractual agreement with WMWD for 30 cubic feet per second (cfs) of imported water (Appendix B.7). RPU takes deliveries from WMWD through several service connections (Table 2.3-1). RPU obtained a maximum of 5,493 acre-feet of water through the Mills Connection (in 1990) and 4,986 acre-feet of water through the Van Buren Highline (in 1999).

Table 2.3-1
Wholesale water connections

Water Agency	Connection	Location	Capacity (gpm)	RPU Pressure Zone
A. WHOLESALE FROM Western Municipal Water District (WMWD) TO RPU				
WMWD*	Mills Connection 24-C	Cannon Road	13,400	1600 Zone
WMWD	Van Buren Highline	Mockingbird Canyon Road	13,400	1200 Zone
B. WHOLESALE BY RPU				
Home Gardens County Water District (HGCWD)		Harlow Avenue	1,500	925 Zone

*WMWD: Western Municipal Water District of Riverside County.

Some RPU customers are provided recycled water for uses such as landscape irrigation to reduce demand on potable water (Section 5). The recycled water is sourced from the tertiary treated effluent from the Riverside Regional Water Quality Control Plant (Section 5), which has a capacity of 40 MGD.

RPU and the Gage Canal Company (Gage) jointly pump the Gage and Deberry wells into the Gage Transmission main. Gage diverts some of the water downstream for irrigation. The diversion into the Gage Canal occurs at the Linden booster station. RPU diverts up to an additional 6,000 acre-feet per year from Gage wells in exchange with the Gage Canal Company for non-potable water from some RPU wells in Riverside Basins. There are plans to substitute the exchanged non-potable water with recycled water (Section 5). The non-potable water used in exchange could then be treated to domestic standards. RPU wheels water produced from rights held by the Regents of the University of California in Bunker Hill basin. Table 2.3-2 lists the export rights from Bunker Hill basin for RPU, UCR, and the Gage Canal Company.

Table 2.3-2
RPU Export Rights from Bunker Hill basin

Export Rights - Bunker Hill Basin (as of 2005)	
Source	acre-feet per year
RPU	22,299
¹ RPU from Gage stock	15,855
RPU shares in Meeks and Daley	3,010
RPU shares in Riverside Highland Water Company (RHWC)	333
Univ of California Regents (UCR)	536
Total	42,033

¹RPU share could increase as more shares are transferred.

Table 2.3-3 provides the summary of existing and planned water supplies available to RPU. Additional details regarding the planned water supplies are described in Section 2.3-2.

Table 2.3-3
Existing and Planned (Projected) Water Supplies (acre-feet per year)

DWR UWMP Review Table 4						
Current and Planned Water Supplies - AFY						
Water Supply Sources	2005	2010	2015	2020	2025	2030
A. EXISTING (as of 2005)						
Bunker Hill groundwater basin	42,033	42,033	42,033	42,033	42,033	42,033
Riverside (North & South) groundwater basins	24,000	24,000	24,000	24,000	24,000	24,000
Gage Exchange (groundwater)	6,000	6,000	6,000	6,000	6,000	6,000
Total Groundwater	72,033	72,033	72,033	72,033	72,033	72,033
Purchased from Western Municipal Water District	2,300	3,800	5,300	6,800	8,300	9,800
Recycled water	200	200	200	200	200	200
B. PLANNED						
John W. North Water Treatment Plant (Groundwater)	-	10,000	10,000	10,000	10,000	10,000
Riverside groundwater - Downtown Area	-			7,000	7,000	7,000
Additional Gage Exchange (groundwater) ¹	-	5,388	5,388	5,388	5,388	5,388
Recycled water ²	-	1,000	3,250	5,500	7,750	10,000
Seven Oaks Dam Conservation Storage	-	2,000	2,000	2,000	2,000	2,000
C. TOTAL (EXISTING + PLANNED)						
Groundwater	72,033	87,421	87,421	94,421	94,421	94,421
Purchased (Imported) water	2,300	3,800	5,300	6,800	8,300	9,800
Recycled water	200	1,200	3,450	5,700	7,950	10,200
Seven Oaks Dam Conservation Storage		2,000	2,000	2,000	2,000	2,000
Total	74,533	94,421	98,171	108,921	112,671	116,421

¹ Irrigation or nonpotable groundwater would be provided to Gage in exchange for potable water from Bunker Hill basin.

² Potable water that would become available as a result of Recycled water use.

2.3.2 Planned Water Supply Sources

The identified potential additional new sources of water supplies as listed in Table 2.3-3 are as follows.

- Development of a 10,000 acre-feet John W. North surface water treatment plant near Grand Terrace to treat shallow groundwater in that area.
- Development of an additional 7,000 acre-feet from Riverside downtown area in the future.
- Conservation storage of 2,000 acre-feet at Seven Oaks Dam.
- Recycled water for exchange and replacing use of domestic water for irrigation.

Those projects are further discussed in Section 2.9.

2.3.3 Groundwater Management Plan (GMP)

Many management activities are undertaken in cooperation with local agencies including the WMWD, SBVMWD, SAWPA, and the SBVWCD. The court appointed Western-San Bernardino Watermasters manage and report on the conditions of all the groundwater basins. The SBVWCD (2005) annually publishes an engineering report to determine replenishment requirements for Bunker Hill basin in the ensuing water year.

RPU is cooperating with stakeholders to develop a groundwater management plan for the Bunker Hill basin. In 2005, the SBVMWD applied for a Proposition 50 planning grant to develop a GMP. SAWPA (2002, 2005) prepared an Integrated Regional Water Management Plan for the entire Santa Ana watershed.

The SBVMWD has established target ranges for groundwater level management within Bunker Hill basin, and is obligated under the 1969 Judgment to maintain water levels in Colton and Riverside North groundwater basins.

The U.S. EPA, the California Department of Toxic Substances Control, and the California Regional Water Quality Control Board, Santa Ana Region cooperated with local agencies to facilitate the cleanup of groundwater contamination in the basins (Section 6).

2.3.4 Description of Groundwater Basins

RPU produces water from the following groundwater basins: Bunker Hill, Colton, Riverside North, and Riverside South. Many agencies have studied the groundwater basins and provided estimates of basin characteristics. Table 2.3-4 summarizes the typical storage characteristics of each of the basins.

2.3.4.1 Bunker Hill Basin (San Bernardino Basin Area)

The “safe yield” for Bunker Hill groundwater basin was determined as part of the 1969 Judgment as 232,100 acre-feet based on verified extractions. “Extractions” included surface diversions. The WMWD-SBVMWD Watermaster based the yield for each of the other basins on the verified average extraction during the 1959-63.

The primary source of recharge water to Bunker Hill basin is from runoff from precipitation in the San Bernardino Mountains to the north.

Table 2.3-4
Storage characteristics of Groundwater Basins

Basin	Surface Area	Storage Capacity	*Depth	Yield
	acres	acre-feet (AF)	feet	AF/year
A. Basins RPU uses for potable water				
Bunker Hill	90,000	5,976,000	> 1,200	232,100
Colton	7,700	593,000	> 700	11,731
Riverside North	12,000	660,000	600 - 700	33,729
Riverside South	20,000	986,000	> 400	29,633
TOTAL	129,700	8,215,000		307,193
B. Basins RPU does not use for potable water				
Arlington	14,000	280,000	> 100	

*Depth Maximum potable water bearing depth

Data Sources: 2003 DWR Bulletin 118, 1986 JMM Water Supply Study;
WMWD-SBVMWD Watermaster

Safe yield is for Bunker Hill. Other yields are "1959-63 base period" average
extraction as verified by the Watermaster.

Both the SBVMWD and the San Bernardino Valley Water Conservation District (SBVWCD) are active in recharging Bunker Hill basin within optimal level ranges. The SBVWCD (EDAW, 2004) recharged as much as 104,545 acre-feet annually from stormwater of the Santa Ana River and Mill Creek in 1922. More recently, SBVWCD recharged about 1,750 and 15,622 acre-feet in 2002 and 2003 respectively (EDAW, 2004). Native stormwater has lower levels of total dissolved solids (TDS) and nitrates than imported water. Additional information on water quality issues in the basins can be found in Section 6.

Appendix B.10 shows the conceptual groundwater level contours in Bunker Hill basin during the fall of 2004. Groundwater level in Bunker Hill basin often recovers significantly during periods of above average precipitation (Appendix B.11).

2.3.4.2 Colton Basin

The San Jacinto Fault separates Bunker Hill basin from Colton-Rialto basin. Table 2.3-4 lists some of the characteristics of Colton basin. Subsurface outflow from Bunker Hill to Colton basin ranges from 14,300 to 23,700 acre-feet per year (USGS, 1963). Appendix B.12 shows that Bunker Hill basin underflow accounts for 34% of total recharge of Rialto-Colton basin between 1945 and 1996 (USGS, 2001).

The 1969 Judgment (Appendix B.6) imposes recharge obligations on SBVMWD to maintain water levels within the Colton and Riverside North basins. A significant proportion of flow within Santa Ana River recharges the groundwater aquifer.

2.3.4.3 Riverside-Arlington Basins

Riverside North groundwater basin is bounded to the north by the Colton-Rialto groundwater basin, from which it receives about 22,000 acre-feet of sub-flow annually (JMM, 1987). Riverside North basin lies within San Bernardino County and its southern boundary is the county line. Maximum aquifer depth in Riverside North basin ranges from about 600 feet to 700 feet, with water bearing units comprised of sand and gravel deposits. JMM (1987) estimated the groundwater storage capacity in the basin is approximately 660,000 acre-feet (Table 2.3-4).

Appendix B.13 shows the estimated groundwater budget for Riverside and Arlington groundwater basins. Both Riverside North and Riverside South groundwater basins are located within the central portion of the Santa Ana River watershed, and both basins are not adjudicated.

RPU produced an average of 8,000 acre feet of potable water per year from the Riverside North Basin based on the production records from the Van Buren wells and RPU's share of production from Deberry well.

Appendix B.14 shows water levels within some selected RPU wells in that basin. SBVMWD is obligated to maintain a threshold groundwater level under the 1969 Judgment.

Riverside South groundwater basin lies within the County of Riverside and has an estimated storage capacity of 986,000 acre-feet based on an average specific yield of 11% and an area of approximately 20,000 acres (JMM, 1987). Appendix B.15 shows groundwater production from Riverside South groundwater basin since 1971.

Groundwater quality and level in the North Orange area are very much influenced by the quality and quantity of water flowing in the Santa Ana River, respectively. Good quality storm water is usually the dominant source of water in the Santa Ana River during the winter season. The North Orange well fields are located within the Riverside North and Riverside South groundwater basins.

Appendix B.16 shows the average monthly static water level in Riverside South groundwater basin. Under the 1969 Judgment, the San Bernardino Valley Municipal Water District is obligated to maintain water levels within the Riverside North and Colton basins.

2.3.5 Adjudication and Water Rights

Bunker Hill groundwater basin is adjudicated. A copy of the judgment is attached as Appendix B.6. The safe yield of Bunker Hill groundwater basin as determined by the WMWD-SBVMWD Watermaster is 232,100 acre-feet per year (Table 2.3-4). RPU export rights from Bunker Hill basin are listed in Table 2.3-2. Since the mid 1980s, the Watermaster permitted additional pumpage from Bunker Hill basin to relief the high groundwater level at some locations within the basin. High groundwater levels in some areas have previously damaged utilities, flooded basements, and could potentially result in liquefaction during earthquakes (Section 4.3).

The WMWD-SBVMWD Watermaster may declare additional surplus water from the Bunker Hill basin on an annual basis based on groundwater conditions in the Area of Historic High Groundwater (AHHG). RPU had benefited from such annual declarations since the early 1980s. In recent years, RPU was allocated about 8,000 acre-feet per year.

Table 2.3-5 summarizes the available groundwater pumping rights by basin for the RPU and the Gage Canal Company. Combined water rights and “verified base period extraction” exceed 80,000 acre-feet per year. Bunker Hill basin is the dominant source, and RPU and Gage Canal Company has exportable extraction rights there, based on the safe yield of that basin (Table 2.3-2).

Table 2.3-5
RPU Groundwater Pumping Rights by Basin

DWR UWMP Review Table 5		
Groundwater Pumping Rights - Acre-feet per Year (AFY)		
Basin Name	Pumping Right - AFY	Type of Right
Bunker Hill Basin ^{1,2,3,4}	53,421	Adjudicated
Colton Basin ⁵	2,418	Historic
Riverside North Basin ⁵	10,902	Historic
Riverside South Basin ⁵	16,880	Historic
Arlington Basin ⁶		Not-adjudicated
Total	83,621	

NOTES:

1. Includes rights held by the Gage Canal Company, the Regents of the Univ. of Calif. and shares in Mutual Water Companies.
2. Does not include Watermaster declared additional "pumpage" for mitigating high groundwater level.
3. RPU can increase rights by purchasing shares from Mutual Water Companies when available.
4. Does not include proposed rights from improved water conservation from the Seven Oaks Dam
5. Figures are not water rights, but base period average annual extraction during the Orange County settlement
6. Basin not adjudicated.

2.3.6 Groundwater Basin Conditions (Overdraft¹ Status)

In California, groundwater management is a local responsibility. It is the responsibility of the local groundwater or water management agency to decide whether a basin is in a condition of overdraft (DWR, 2003). DWR (2003) did not identify any of the basins utilized by RPU as overdrafted, nor projected any to be overdrafted. According to DWR (2003) Bulletin 118 classification, local groundwater basins are located in the Upper Santa Ana Valley (Basin 8.2) of the South Coast Hydrologic Region. Some of the sub-basins of the Upper Santa Ana Valley include: Riverside-Arlington (8-2.03), Rialto-Colton (8-2.04), and Bunker Hill (8-2.06).

Table 2.3-6 shows the status of the various groundwater basins based on the most recent conditions available to RPU in July 2005. All the sub-basins are of “Groundwater Budget Type” A. “Type A – indicates one of the following: (1) a groundwater budget exists for the basin or enough components from separate studies could be combined to give a general indication of the basin’s groundwater budget, (2) a groundwater model exists for the basin that can be used to calculate a groundwater budget, or (3) actual groundwater extraction data exist for the basin” (DWR, 2003).

Table 2.3-6

Overdraft Status of Groundwater Basins			
Groundwater Basin (see Fig. 2-1)	Overdrafted?	Projected to be Overdrafted?	Remarks
Bunker Hill	No	No	Riverside has specified water rights per adjudication. "High" groundwater level in the pressure zone. SBVMWD implementing ongoing efforts to mitigate "high" groundwater level.
Colton-Rialto	No	No	SBVMWD obligated to maintain water level.
Riverside-North	No	No	SBVMWD obligated to maintain water level.
Riverside South	No	No	High groundwater level in some areas.
Arlington	No	No	Not presently used for domestic supplies.
NOTES: <i>Under the 1969 Judgment, the San Bernardino Valley Municipal Water District (SBVMWD) is obligated to maintain minimum water levels within the Colton-Rialto and Riverside North basins.</i>			

2.3.7 Past Production

The following Table 2.3-7 and Table 2.3-8 provide the historic summary of production of potable and non-potable water from all sources. Total groundwater production reached over 100,000 acre-feet in 1999 but declined to 88,724 in 2003. Purchased imported water decreased from 5,423 acre-feet in 1990 to less than 50 acre-feet in 1993.

¹ The California Department of Water Resources (DWR, 1998) defines groundwater overdraft as the condition of a groundwater basin or sub-basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years, during which the water supply conditions approximate average conditions. SB 221 and SB 610 require water agencies to evaluate available groundwater resources using the most complete and recent information.

Table 2.3-7
Historical Annual Production of Potable and Irrigation Water (acre-feet/year)

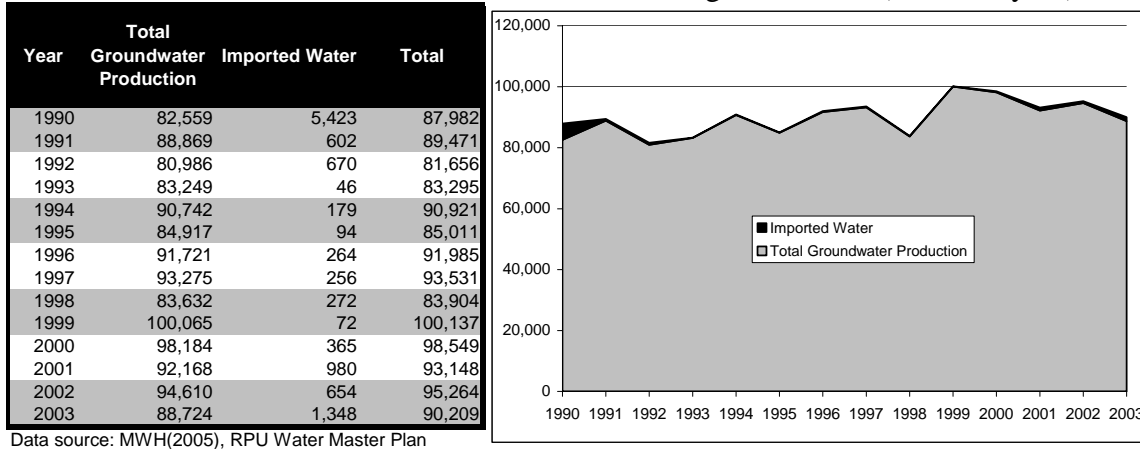


Table 2.3-8
Historical Annual Production of Potable Water (acre-feet/year)

Year	Potable Groundwater Supply (acre-ft/yr)	Imported Water (acre-ft/yr)	Total Potable Supply (acre-ft/yr)	Domestic Delivery to WMWD (acre-ft/yr)	City's Potable Use (acre-ft/yr)	Annualized Trending (acre-ft/yr)
1999	78,015	72	78,087	4,986	73,101	72,187
2000	77,261	365	77,626	3,143	74,483	72,982
2001	74,281	980	75,261	2,472	72,789	73,778
2002	79,572	654	80,226	2,509	77,717	74,574
2003	72,547	1,348	73,895	1,481	72,414	75,369

Data source: MWH(2005), RPU Water Master Plan

Table 2.3-9 summarizes the amount of potable groundwater pumping by basin for the RPU domestic system between 2000 and 2004. Over 95% of the water was obtained from local groundwater basins.

Table 2.3-9
Amount of Potable Groundwater Pumped by RPU 2000 – 2004

DWR UWMP Review Table 6					
Amount of Potable Groundwater pumped - AFY					
Basin Name (s)	2000	2001	2002	2003	2004
Bunker Hill ¹	39,328	40,281	40,363	41,749	41,860
Gage Exchange ²	5,935	5,585	3,251	2,546	2,000
Other Bunker Hill sources ³	15,332	12,656	18,357	10,068	0
Riverside North	5,767	5,865	5,494	4,793	6,000
Riverside South	10,899	9,894	12,107	13,391	21,000
Total Groundwater	77,261	74,281	79,572	72,547	70,860
% of Total Water Supply	99.5%	98.7%	99.2%	98.2%	95.8%
Total Water Supplies (Ground & Surface water)	77,626	75,261	80,226	73,895	73,948

1. Supply is based on the RPU's water rights.
 2. Received from Gage Canal Company in exchange for delivery of irrigation water.
 3. Annual declared water surplus and or extra water purchased from Gage Canal Company.

Table 2.3-10 shows the amount of groundwater pumpage projected between 2010 and 2030. The proportion of groundwater pumpage that is over 75% would decline due to increased contribution from use of recycled water. Note the primary source of the recycled water is local groundwater that had gone through the domestic water system and the sewage treatment plant. As discussed previously, projected pumpage is based on safe yield of the basins or “base period” pumpage, and no adverse impacts on existing groundwater flow directions and water levels are expected. Additional demand in future will be partially met from increased use of recycled water and increased recharge from native stormwater. Many of the wells are connected to regional wellhead treatment facilities, coupled with blending capacity could potentially mitigate some unanticipated incremental contamination (Appendix B.4). Water quality issues are discussed further in Section 6. Recharge operations are to be coordinated to prevent adverse effects on groundwater level and quality in accordance with groundwater level optimal management plan.

Table 2.3-10
Amount of Groundwater Projected to be pumped

DWR UWMP Review Table 7					
Amount of Groundwater projected to be pumped - AFY					
Basin Name(s)	2010	2015	2020	2025	2030
Bunker Hill ¹	48,033	48,033	48,033	48,033	48,033
Riverside Basins (North and South) ²	34,000	34,000	41,000	41,000	41,000
Total Groundwater	82,033	82,033	89,033	89,033	89,033
Total Water Supplies	94,421	98,171	108,921	112,671	116,421
Groundwater as % of Total Water Supplies	87%	84%	82%	79%	76%

¹Includes Gage Exchange and recharged yield of Seven Oaks Dam

²Includes planned projects (Downtown Riverside and John W. North Treatment Plant)

2.4 Reliability of Supply

RPU water supply sources have been very reliable. Local water agencies are cooperating to further increase the reliability of the groundwater basins (Section 2.3.3 and 2.4.2). In summary, RPU relies on local groundwater resources that have proven very reliable even during multi-year droughts such as 1987-1992 and 1999-2004. To date, RPU has not experienced any major deficiencies in water supply.

RPU can have an advance notice of onset of drought conditions based on groundwater level feedback because most of the precipitation occurs between January and April, while the period of most water demand occurs after the precipitation season, i.e., from June through October. The WMWD-SBVMWD Watermaster also annually independently reviews groundwater conditions to assess the existence of high groundwater conditions. In the 1990s, the Watermaster permitted additional extraction from Bunker Hill basin when groundwater levels were shallower than optimal levels.

2.4.1 Seasonal² and Climatic Shortages

DWR (2005) defines a multiple-dry year period as generally “three or more consecutive years with the lowest average annual runoff.” In recent years, RPU obtained more than 60% of its water supplies from Bunker Hill groundwater basin. In Bunker Hill basin, 1992, 1994, and 1999 through 2004 were chosen to represent average, single-dry, and multiple dry years respectively (Table 2.4-1) to reflect more recent land use, pumping patterns, and more recent basin management activities.

Table 2.4-1
Basis of Water Year Data

DWR UWMP Review Table 9 Basis of Water Year Data	
Water Year Type	Base Year(s)
Average Water Year	1992
Single-Dry Water Year	1994
Multiple-Dry Water Years	1999-2004

Potable water demand in 1992 was 64,443 acre-feet which increased to 72,414 acre-feet by 2003 despite several years of below average precipitation. Purchase of imported water also increased during the dry period to meet increased demand from population growth. In 2004, a major cause of the increased purchase of imported water was because of temporary transmission main constraints due to on-going construction of California

² DWR (2005) defines “seasonal shortages” as being based “upon the precipitation patterns of individual watersheds and may vary substantially from one year to the next.” DWR (2005) defines “climatic shortages” as being based “upon known factors such as El Nino, the Pacific Decadal Oscillation, and Jet Stream variations”.

Department of Transportation (Caltrans) and the rehabilitation of Riverside Canal. Caltrans was upgrading the 90-60-215 freeway Interchange that required relocation of some sections of the transmission main.

Table 2.4-2
Supply Reliability

DWR UWMP Review Table 8 Supply Reliability - AF/Year						
Source	Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years			
			Year 1	Year 2	Year 3	Year 4
	Historic Year -> 1992	1994	2000	2001	2002	2003
Groundwater	63,773	69,820	77,261	74,281	79,572	72,547
Imported Water	670	179	365	980	654	1,348
Reclaimed Water	0	0	139	133	134	137
TOTAL	64,443	69,999	77,765	75,394	80,360	74,032
% of Normal (1992)	100%	109%	121%	117%	125%	115%

In general, groundwater and reclaimed water are less vulnerable to seasonal climatic changes. RPU had been able to increase production from local groundwater basins during previous droughts.

The 1969 Judgment permits RPU to increase groundwater production by up to 20% in any single year for peaking purposes. Local groundwater supplies account for about 99% of water supplies of RPU, with more than 60% originating from Bunker Hill basin. Bunker Hill basin is adjudicated. RPU rights were based on the long-term safe yield of Bunker Hill basin that included single-dry and multiple-dry years, and supplies from that basin are very reliable. RPU wells are generally located at the section of the basin, with the greatest thickness of water bearing layers. Planned water supply projects aim to reduce reliance on imported water and increase local groundwater production.

2.4.2 Consistency of Supplies

RPU water supplies are consistently available (Table 2.4-3). In order to maintain and improve existing water supplies, RPU has collaborated with other local water agencies through SAWPA and the Upper Santa Ana Watershed Resources Association (USAWRA) to address the various groundwater management issues that affect the reliability of local water supplies. Typical collaborative efforts include developing groundwater models for the Riverside basin, and conducting source water assessments (SWA).

In December 2002, RPU completed source water assessments of the various basins pumped for domestic water. RPU also developed Source Water Protection Plan for the North Orange area to minimize impacts of septic systems on groundwater (see Section 6). In 2002, Riverside City Council adopted an ordinance regarding moratorium on new septic systems in the Highgrove/North Orange area and encouraged the County to adopt similar ordinance.

Table 2.4-3
Factors resulting in inconsistency of supply

DWR UWMP Review Table 10				
Factors resulting in inconsistency of supply				
Name of supply	Legal	Environ- mental	Water Quality	Climatic
Groundwater	None	None	None	None
Imported water	None	None	None	None

RPU completed several wellhead treatment facilities to treat previously abandoned wells such as Twin Springs, Palmyrita, and Moore-Griffith wells. RPU also increased blending capacity with the construction of a major transmission main from the North Orange well field to the Linden and Evans Reservoirs.

The California Regional Water Quality Control Board, Santa Ana Region through the basin plan established objective levels for nitrates and TDS to protect the beneficial use of water in the basins.

2.5 Water Exchanges and Transfers

According to the Water Code definition of short and long-term: short-term is for duration of one year or shorter and long-term is for a duration that is longer than one year. Table 2.5-1 summarizes transfer and exchange opportunities. RPU began a water exchange program with Gage Canal Company in 1991 to augment its domestic supplies. The Gage Exchange Program (GEP) is one of several measures that enabled RPU to reduce the purchase of imported water. Under the GEP, RPU can divert up to an additional 6,000 acre-feet per year for domestic purposes from the Gage Canal at Linden. In exchange, the Gage Canal Company receives up to 8,000 acre-feet per year of non-potable irrigation water (ratio of 1.0 to 1.25) from Riverside and Colton Basins. The capacity of the existing facilities has limited the amount of water exchanged. RPU is planning delivery of recycled water or non potable groundwater (it is understudy) to Gage Canal Company (Section 2.9). This would allow full exchange of Gage's groundwater supply resulting in additional delivery of up to 5,388 acre-feet per year (Table 2.3-3).

Table 2.5-1
Transfer and Exchange Opportunities

DWR UWMP Review Table 11 Transfer and Exchange Opportunities - AF Year					
Transfer Agency	Transfer or Exchange	Short term	Proposed Quantities	Long term	Proposed Quantities
Gage Canal Company (GCC)	Exchange			X	6,000
GCC Additional exchange	Exchange			X	5,388
Total					11,388

2.6 Past, Current and Projected Water Use

All RPU customers are on meters. Table 2.6-1 presents the past, current, and projected water use for the 1995 – 2030 period. The potable water use data in Table 2.6-1 is from the billing records, and the non-potable use is from well production records. All wells are metered. Recycled water sales are also metered and are reported in Table 2.6-5.

Table 2.6-1
Past and Projected Water Deliveries

DWR UWMP Review TABLE 12 - Past, Current and Projected Water Deliveries						
	2000		2005		2010	
	metered		metered		metered	
Water Use Sectors	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY
Single & Multi family	53,879	42,949	56,627	44,297	59,515	48,019
Commercial¹	3,990	11,796	4,193	12,167	4,407	13,188
Industrial¹	366	10,870	385	11,211	404	12,152
Agriculture²	236	1,180	248	1,244	261	1,348
Other	67	408	70	421	74	456
Total	58,538	67,203	61,523	69,340	64,661	75,164

¹Commercial or Industrial Sector includes "Institutional" based on meter size.

²Is anticipated to be recycled water

DWR UWMP Review TABLE12 (continued) - Past, Current and Projected Water Deliveries						
	2015		2020		2025	
	metered		metered		metered	
Water Use Sectors	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY
Single & Multi family	62,550	50,071	65,740	51,545	67,007	52,538
Commercial¹	4,632	13,752	4,868	14,157	4,962	14,430
Industrial¹	425	12,672	447	13,046	456	13,297
Agriculture²	274	1,406	288	1,447	294	1,475
Other	78	476	82	490	84	499
Total	67,959	78,377	71,425	80,684	72,802	82,239

¹Commercial or Industrial Sector includes "Institutional" based on meter size.

²Is anticipated to be recycled water

DWR UWMP Review TABLE12 (continued) - Past, Current and Projected Water Deliveries						
	2030					
	metered					
Water Use Sectors	# of accounts	Deliveries AFY				
Single & Multi family	68,687	53,856				
Commercial¹	5,086	14,792				
Industrial¹	467	13,630				
Agriculture²	301	1,512				
Other	86	512				
Total	74,627	84,301				

¹Commercial or Industrial Sector includes "Institutional" based on meter size.

²Is anticipated to be recycled water

Notes: Projections of meter #s assumed constant rate of growth after 2015

Some data are from 2001 RPU UWMP and adjusted 2005 RPU Water Master Plan based on CIS data.

Table 2.6-1 present the past, current, and projected number of connections. The numbers of service meters are projected assuming an increase of 1 percent per year between 2005 and 2015 and a constant rate of growth after 2015 through 2030. The demand projections for each water use sector were based on average delivery per service meter.

The Residential category in Table 2.6-1 includes both the single family and multi-family residential categories. Customer billing records maintained by RPU do not differentiate between single family residential and multi-family residential uses. The average residential use per connection is 0.8 acre-feet per year or 700 gallons per day.

The Agricultural category consists of that portion of the domestic water primarily used for irrigation purposes.

2.6.1 Sales to Other Agencies

The two major wholesale water customers of RPU are the Home Gardens County Water District (HGCWD) and WMWD. HGCWD serves about 800 domestic customers located between Riverside and Corona with a water service area of 232.5 acres. HGCWD is also a wholesale entity of WMWD and can receive water from the WMWD through RPU facilities. HGCWD has its own well and is considered "built-out" and projects the same water demand through the year 2025 ([Riverside County] LAFCO, 2005).

RPU provides (interruptible) domestic supplies to WMWD whenever there is available water supply (Table 2.3-8). WMWD purchased about 3,000 acre-feet of water in 2000 from RPU.

Table 2.6-2
Sales to other agencies

DWR UWMP Review Table 13 Sales to Other Agencies - AF Year							
Water Distributed	2000	2005	2010	2015	2020	2025	2030
Home Gardens CWD ¹	305	540	540	540	540	540	540
Western Municipal Water District ²	3,143						
Total	3,448	540	540	540	540	540	540

1. Home Gardens County Water District - Full Buildout demand = 540 acre-feet/yr (2005 LAFCO MSR)

2. Sales to Western MWD is interruptible and depends on amount of available water.

Sources: 2004 RPU Water Supply Plan and CIS Records. 2005 Riverside County LAFCO Municipal Service Review (MSR)

2.6.2 Additional Water Uses and Losses

Unaccounted for Water

Unaccounted water is the quantity difference between the amount of water locally produced/purchased from wholesalers and the amount of water sold to customers from billing records. In reality distribution system leakage, accounting/metering errors, water theft may explain some of the unaccounted losses within the system. Table 2.6-3 shows that the unaccounted for water ranged from 9% through 20% between 1999 and 2003. An average of 11% for the period is higher than the 8% to 10% typical of other water agencies in Southern California (MWH, 2005). MWH (2005) recommended Water Master plan Capital Improvement Program (CIP), meter and accelerated pipeline replacement program could enable some reduction in the volume of unaccounted for water.

Table 2.6-3
Historic Unaccounted for Water

Year	City's Production (AFY)	Billing Record Sales (AFY)	Water Loss
1999	73,101	64,523	12%
2000	74,483	68,067	9%
2001	72,789	65,164	10%
2002	77,717	62,056	20%
2003	72,414	63,556	12%

Data from City of Riverside 2004 Water Supply Plan

Table 2.6-4 show the projected unaccounted for water and the amount of water production required to meet projected future demand.

Table 2.6-4
Projected Unaccounted for Water

Year	Water Demand (AFY)	Production required to meet demand (AFY)	Recycled water use (AFY)	Production required adjusted for recycled water usage (AFY)	Revised Water Demand (AFY)	Estimated unaccounted for water (AFY)
2005	77,529	77,767	200	77,567	69,880	7,687
2010	84,254	85,231	1,200	84,031	75,704	8,327
2015	89,494	91,048	3,450	87,598	78,917	8,681
2020	93,828	95,858	5,700	90,158	81,224	8,935
2025	97,410	99,835	7,950	91,885	82,779	9,106
2030	101,499	104,374	10,200	94,174	84,841	9,333

¹Production from MWH estimates (Table 2.2-1)

²Production adjusted for "unaccounted for water", estimated by MWH as averaging 11%; only the incremental demand over 2003 demand must be increased to account for unaccounted water.

³Recycled water use = planned recycled water use + existing recycled water use (200 AFY).

Table 2.6-5 summarizes the additional water uses and losses. Unaccounted-for system losses averaged about 11% between 1989 and 2003 (RPU, 2004).

Table 2.6-5
Additional Water Uses and Losses

DWR UWMP Review Table 14							
Additional Water Uses and Losses - AF Year							
Water Use	2000	2005	2010	2015	2020	2025	2030
Recycled	139	200	1,200	3,450	5,700	7,950	10,200
Unaccounted-for system losses ¹	6,109	7,687	8,327	8,681	8,935	9,106	9,333
Total	6,248	7,887	9,527	12,131	14,635	17,056	19,533

Data sources: 2004 RPU Water Supply Plan, 2005 RPU Water Master Plan (MWH)

¹Unaccounted losses based on 1989-2003 average of 11% of supplies and adjusted projected Water Master Plan (MWH, 2005) Demand.

2.6.3 Total Water Use

Table 2.6-6 summarizes the projected total water use. Total water use is projected to exceed 100,000 acre-feet after 2025.

Table 2.6-6
Total Water Use

DWR UWMP Review Table 15							
Total Water Use - AF Year							
Water Use	2000	2005	2010	2015	2020	2025	2030
Past, current, and projected water deliveries (1)	67,203	69,340	75,164	78,377	80,684	82,239	84,301
Sales to other Agencies (2)	3,448	540	540	540	540	540	540
Additional water uses (3)	6,248	7,887	9,527	12,131	14,635	17,056	19,533
Total (1) + (2) + (3)	76,899	77,767	85,231	91,048	95,858	99,835	104,374

Data Sources: (1) DWR UWMP Review Tables 12. (2) Sales to other agencies from Table 13.

(3) From Table 14. Sum of recycled usage and unaccounted water losses.

2.7 Demand Management Measures (DMM)

RPU Department is a signatory to the Memorandum of Understanding (MOU) of the California Urban Water Conservation Council (CUWCC). The discussions regarding DMM are presented in Section 3.

2.8 Evaluation of DMMs not implemented

Section 3 shows that RPU implements all the applicable BMPs of the California Urban Water Conservation Council.

2.9 Planned Water Supply Projects and Programs

The long-range water supply plan identified the following planned water supply projects to increase future supplies:

- Expanded Gage Exchange Program.
- Increased groundwater production from Riverside South basin (downtown treatment, Riverside).
- John W. North Treatment Facilities in Grand Terrace.
- Expanded use of recycled (Section 5) water for non-potable uses.
- Seven Oaks Dam Conservation

The expected yield and schedule from the planned projects are summarized in Table 2.9-1. The projects were also discussed earlier in Section 2.3. Note that all the proposed projects rely on local water sources and mainly include expanding existing operations. Yield from the proposed projects would be consistent because of the historical reliabilities of those local sources.

The proposed downtown treatment facilities will treat water from existing wells (11th Street, Fill, First Street and Cunningham) using GAC and membrane technologies. A proposed transmission main will deliver treated water from the proposed project to RPU distribution system.

The John W. North Treatment Facilities in Grand Terrace will treat non-potable water from existing wells such as the Flume Tract in Colton Basin. Some of the Flume wells were rehabilitated in 2005. The project will be built in 2 phases: (1) a 5 million gallon per day (MGD) facility, and (2) expansion into a 10 MGD facility as demand increases.

Expanding the exchange program with the Gage Canal Company could allow RPU to use the entire water rights of the GCC in the Bunker Hill Basin (11,388 acre-feet per year as of January 2005). GCC would receive non-potable water and/or recycled water from

RPU in exchange. Under the full exchange program, the RPU can obtain up to 49,542 acre-feet from the Bunker basin not including the more than 3,343 acre-feet from shares held in mutual water companies and UCR's 536 acre-feet of water rights.

Additional production of up to 7,000 acre-feet per year from the Riverside downtown area within the Riverside South Basin could require additional wells and treatment for DBCP. RPU will be evaluating the feasibility of increasing production from Riverside South basin.

Table 2.9.1
Future Water Supply Projects

DWR UWMP Review Table 17 Future Water Supply Projects							
Project Name	Projected Start Date	Projected Completion Date	Normal-year acre-feet (AF) to RPU	Single-dry year yield AF	Multiple-Dry Year 1 AF	Multiple-Dry-Year 2 AF	Multiple-Dry-Year 3 AF
Seven Oaks Dam	2005	2010	2,000	2,000	2,000	2,000	2,000
Gage Exchange	2005	2010	5,388	5,388	5,388	5,388	5,388
Recycled water	2005	2030	10,000	10,000	10,000	10,000	10,000
John W. North Water Treatment Plant	2005	2010	10,000	10,000	10,000	10,000	10,000
Riverside South (Downtown) Basin Additional	2015	2020	7,000	7,000	7,000	7,000	7,000
TOTAL			34,388	34,388	34,388	34,388	34,388

Note: The proposed projects are at conceptual or preliminary stages of development. Studies and evaluations are underway or planned.

Additional information regarding expanded use of recycled water is in Section 5.

The 1969 Judgment permits RPU to acquire additional water rights through "new conservation." RPU provided some of the funding for conservation storage of water behind the Seven Oaks Dam. WMWD and the San Bernardino Valley Municipal Water District (SBVMWD) filed a water right application with the State Water Resources Control Board for the "newly conserved" water from the dam.

The projected water from Seven Oaks Dam could be recharged into the local groundwater basins for future extractions. RPU (2004) estimated its share of water at over 2,000 acre-feet per year, based on the feasibility report by the U.S. Army Corps of Engineers. In 2004, WMWD and the SBVMWD jointly prepared the draft EIR (SAIC, 2004) to support the water rights application. The Riverside share of water from Seven Oaks Dam would be available to RPU from Bunker Hill Basin or a conjunctive use plan, at RPU's discretion. The new conservation yield is anticipated to be fully available from 2010.

2.10 Development of Desalinated Water

RPU have no immediate plans for desalination. Nitrates and Total Dissolved Solids (TDS) levels in blended water produced by RPU are lower than their respective Maximum Contaminant Level (MCL) and Secondary MCL (SMCL). SAWPA owns and

operates the Arlington desalter to improve groundwater quality in the Arlington basin using 5 wells in that basin. The Arlington desalter supplies water to the City of Norco. RPU does not produce nor plan to produce potable water from Arlington basin as of 2005. Arlington basin is not adjudicated and is distant downstream of major RPU water reservoirs. Opportunity also exists for RPU to consider desalting Arlington basin when less expensive (and less energy intensive) sources are not adequate to meet demand.

Table 2.10-1
Opportunities for Desalinated Water

DWR UWMP Review Table 18 Opportunities for desalinated water	
Sources of Water	Check if yes
Ocean Water	
Brackish ocean water	
Brackish groundwater	X

2.11 Current or Projected Supply Includes Wholesale Water

RPU is a wholesale customer of WMWD. WMWD is a wholesale customer of the Metropolitan Water District of Southern California (MWD). Table 2.11-1 is a summary of the projected purchase of imported water provided by RPU to WMWD. RPU can receive up to 60 cubic feet per second (cfs) of water from the Mills Filtration Plant (Mills) operated by MWD.

Table 2.11-1
Projected Demand provided to Western Municipal Water District

DWR UWMP Review Table 19 RPU demand projections provided to wholesale suppliers - AFY					
Wholesaler	2010	2015	2020	2025	2030
Western Municipal Water District	3,800	5,300	6,800	8,300	9,800

RPU can take delivery of imported water through three connections:

- Campbell Reservoir connection (up to 30 cfs from Mills),
- Van Buren connection (up to 30 cfs can be delivered to Van Buren and Mockingbird Reservoirs), and the
- Whitegates connection (up to 5 cfs can be delivered at Whitegates as part of the 60 cfs).

MWD has implemented several measures to increase the reliability of its supplies. In 1999, MWD adopted the Water Surplus and Drought Management (WSDM) Plan that describes the management of regional water supplies to achieve the reliability goals. MWD (2004) evaluated the reliability of its water supplies as part of its update of its Integrated Resources Plan (IRP). MWD (2005) fully expects to be 100 percent reliable in meeting all wholesale demand through 2030. MWD (2005) also identified buffer supplies that could supply additional water such as SWP groundwater storage and transfers.

Table 2.11-2 and Table 2.11-3 respectively summarizes wholesaler provided information regarding availability and reliability of supplies.

Table 2.11-2
Western Municipal Water District Quantified Sources of Water

DWR UWMP Review Table 20						
Wholesaler identified & quantified the existing and planned sources of water- AFY						
Western MWD sources	2005	2010	2015	2020	2025	2030
MWD-WMWD Wholesale Service	78,024	88,902	101,146	111,837	123,784	134,028

Source: Table 4, Draft 2005 WMWD Urban Water Management Plan

Table 2.11-3
Western Municipal Water District Supply Reliability

DWR UWMP Review Table 21					
Wholesale Supply Reliability - % of normal AFY					
Wholesaler sources	Multiple Dry Water Years				
	Single Dry	Year 1	Year 2	Year 3	Year 4
MWD Supplies	100	100	100	100	100

Source: Table 8, Draft 2005 WMWD Urban Water Management Plan

Table 2.11-4 summarizes the factors that could affect the consistency of wholesale water supplies as identified by the wholesaler. MWD (2005) describes plans to reduce potential shortfalls – including the development of additional storage and new supplies.

Table 2.11-4
Factors resulting in inconsistency of supplies from Western Municipal Water District

DWR UWMP Review Table 22				
Factors resulting in inconsistency of wholesaler's supply				
Name of supply	Legal	Environment	Water Quality	Climatic
MWD	Competition for new supplies	Endangered species	Contamination of supply. More stringent water quality standards	Drought conditions

Source: Table 10, Draft 2005 WMWD Urban Water Management Plan

As described earlier, RPU is implementing several measures to maximize the use of local water resources and reduce reliance on imported water. Purchase of imported water is anticipated to be limited to during emergencies and localized drought.

3 WATER DEMAND MANAGEMENT

3.1 DMM Implementation

RPU Department is a signatory to the Memorandum of Understanding (MOU) of the California Urban Water Conservation Council (CUWCC). RPU participates in local and regional demand side management (DSM) programs.

RPU is providing the annual reports filed with the CUWCC identifying water demand management measures implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g) of California Water Code Section 10631.

RPU submitted the information regarding BMP Activity Reports and coverage reports electronically to CUWCC. BMP Activity Reports for 2003-04, 2001-02 are attached as Appendix C.1 and C.2 respectively. Appendix C.3 is the coverage report for 2001-02.

4 WATER SHORTAGE CONTINGENCY PLAN

4.1 Stages of Action

RPU has implemented several measures to improve the reliability of the water system since the last update of the Urban Water Management Plan (Section 2). RPU has also developed additional water supplies that will reduce the severity and frequency of potential shortages (Section 2). RPU has developed several programs for addressing short-term water shortages including purchasing imported water from the WMWD.

Table 4.1.1 describes the various water shortage stages and their respective typical triggering conditions. Water rationing may be voluntary or mandatory depending on the causes, severity, and expected duration of shortage, groundwater levels, and the availability of alternate supplies. During the 1987-92 drought, voluntary reductions in water usage up to 7% occurred because customers responded to conservation messages from adjacent communities within the same mass media-market as RPU. Mandatory rationing may be necessary to achieve higher reduction goals. RPU may declare a water shortage emergency depending on the severity of the shortage. Prohibitions and consumption reduction methods are discussed later in Section 4.4. Appendix D.1 is the adopted water shortage Ordinance.

Table 4.1-1
Water Supply Shortage Stages and Conditions

DWR UWMP Review Table 23 Water Supply Shortage Stages and Conditions RATIONING STAGES				
Stage No.	Water Supply Conditions	Supply Shortage (%)	Reduction Goal (%)	Rationing Type
1	First and second year of a drought	5	5	Voluntary
2	Third and Fourth year of drought	10	10	Mandatory
3	Fifth and sixth year of a drought	20	20	Mandatory
4	Multi-year (≥ 7) extreme drought	50	50	Mandatory

4.2 Estimate of Minimum Supply for Next Three Years

For RPU, the most appropriate driest three-year historic sequence is from 2000-2002 mainly because:

- Precipitation was below normal during the period.
- The period best reflects the most recent hydrogeological situation within local groundwater basins and higher water demand that reflected population growth.

Table 4.2.1 are the projected minimum water supply for the next three years.

Table 4.2.1
Estimated 3-year Minimum Water Supplies

DWR UWMP Review Table 24					
Three-Year Estimated Minimum Water Supply - AF Year					
Source of Water	Normal	Projected ->	2006	2007	2008
		Historic Year Based on ->	2000	2001	2002
Bunker Hill groundwater basin	41,860		39,328	40,281	40,363
Gage Exchange (Bunker Hill basin)	6,000		5,935	5,585	3,251
Other Bunker Hill ¹	11,095		15,332	12,656	18,357
Riverside North basin	6,000		5,767	5,865	5,494
Riverside South basin	12,000		10,899	9,894	12,107
Groundwater Total	76,954		77,261	74,281	79,572
Recycled water²	140		139	133	134
Purchased Imported water			365	980	654
Domestic Delivery to Western MWD³			(3,143)	(2,472)	(2,509)
Total	77,094		74,622	72,922	77,851

Data source: 2004 RPU Water Supply Plan

NOTES

¹Equals Annual Watermaster declared surplus water (annual declaration not a firm supply) from Bunker Hill Basin and purchased water.

²Additional reclaimed water over and above historic amounts would be available as delivery infrastructure develops.

³From Western Municipal Water District. No further sales anticipated during 2006-2008.

4.3 Catastrophic Supply Interruption Plan

Among the major hazards that can degrade the quality and/or impact the quantity of water available to RPU water system include regional power outages, earthquakes, liquefaction (high groundwater level), floods, chemical spills, groundwater contamination, and terrorist acts (Table 4.3-1). Some of those hazards could also adversely impact the distribution systems, such as the major transmission mains, or reservoirs. Interruptions to water supplies from any of the above mentioned hazards may be limited to days or even months, except for groundwater contamination, which could last several years.

Actions taken to prepare for a catastrophe include the following:

- Establishing criteria for a proclamation of water shortage (Section 4.1).
- Developing alternate sources of water supplies (Section 2.9).
- Establishing contacts and mutual aid agreement with other agencies (Section 4.3.7).
- Establishing an Emergency Response Team/Coordinator.
- Preparing an Emergency Response Plan (ERP).
- Developing public awareness programs.

RPU has implemented many measures that reduced the vulnerability of the water system to the aforementioned hazards. Many of the measures implemented are appropriate to

several of the hazards and are summarized in Table 4.3-1 and discussed further in following sections. In 1995, RPU prepared an Emergency Response Plan. In 2004, RPU updated the Emergency Response Plan as required under the U.S. Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL 107-188).

The RPU (2005a) ERP may be activated whenever any of the following conditions exist:

- Regional Power Outage
- Natural Disasters such as earthquake, flood, etc.
- Loss of Transmission Mains or other major facilities.
- Water quality issues involving a "boil water" order or other contamination.
- Emergency curtailment.
- Disturbance affecting nearby utilities.
- Terrorist activities.
- Hazardous spills.

Table 4.3-1
Possible Catastrophes Discussed

DWR UWMP Review Table 25 Preparation Actions for a Catastrophe	
Possible Catastrophe	Summary of Action to Prepare for Catastrophe¹
Regional power outage	Added additional local power sources including some renewable energy. Improved reliability of transmission and distribution systems.
Earthquake	Increased local reservoir emergency storage. Installed new transmission mains to connect local wells to Central City reservoirs.
High groundwater level / Liquefaction	Assisted in mitigation high groundwater level in Bunker Hill basin.
Floods	Relocated wells from flood plains. Upstream Seven Oaks Dam reduces flooding risk.
Groundwater Contamination	Developed Water Supply Contingency Plan. Installed wellhead treatment. Prepared Source Water Assessment for wells. Developed Source Water Protection Plan. Negotiated agreements with responsible parties to pay for future cleanup.
Terrorism/Sabotage	Vulnerability Assessment (VA) and Emergency Response Plan. Implemented VA recommendations.

¹In addition to preparing an ERP.

The ERP (RPU, 2005a) will guide damage assessment, record keeping, prioritization of repairs, and coordination with other City Departments. The goal is returning to normal operations as soon as practicable.

Typical RPU actions during voluntary rationing include public information campaign and media outreach to encourage conservation. Typical emergency response actions to the above listed possible catastrophes may include one or more, but not limited, to the following:

- Assemble crisis management teams at pre-designated locations and Emergency Operations Center (EOC).
- Assess and document damaged facilities. Repair or reactivate as appropriate.

- Assess for signs of contamination, i.e., increase the frequency of monitoring.
- Deactivate contaminated sources.
- Install additional treatment facilities.
- Community outreaches e.g., public education, media outreach, boil water advisories.
- Coordination with other City Departments, and other government agencies.
- Seek mutual aid assistance.
- Drain contaminated reservoirs as quickly as possible.

An assessment of each listed catastrophe and summarized description of previous responses and/or actions undertaken to prepare for such catastrophe follow.

4.3.1 Regional Power Outages

RPU provides both water and electricity within the City of Riverside. RPU was not severely impacted by the electrical power crises in 2001. RPU is a municipal owned utility. RPU maintains a diverse power supply portfolio that includes long term base load and local generating facilities (LGF). LGF includes the 440 kilo watts (kW) of solar power, 40 megawatts (MW) Springs 'peaker' power plant, and the new 96 MW Riverside Energy Resource Center (RERC) power plant, which will come online in 2006 (Section 5). Long-term base load of 266 MW includes very near power sources such as landfills and the Salton Sea Geothermal. In 2005, total available capacity to meet peak summer demand was 597 MW compared to a peak record power demand of 544 MW (July 2005) or about 10% reserve capacity. RPU is upgrading transmission facilities and reviewing load shedding and emergency restoration procedures to minimize outage time. In summary, RPU is less vulnerable to Regional power outages.

Some wells in Bunker Hill basin (Waterman system) are powered by electricity provided by Southern California Edison. During electrical power outages, RPU can still produce some potable water because most of the Gage wells and Garner B, and some booster stations are powered by gas engines or can also be powered by gas engines. The water distribution system is entirely within the RPU electric service territory. Most of the pressure zones within the distribution system are fed by gravity from reservoirs (MWH, 2005). The 2005 Water Master plan (MWH, 2005) sized distribution system reservoirs using several criteria including emergency storage capacity of at least 150 percent of average day demand or 88% of the maximum day demand (MDD). RPU is most likely to have some water in storage to meet an average day demand.

4.3.2 Earthquakes

Riverside is located close to active earthquake faults such as the San Andreas, and San Joaquin. Earthquake poses potential significant risks to the RPU water system, and could potentially result in water supply shortages and disruptions to the transmission/distribution systems. Groundwater produced from wells in San Bernardino area is conveyed using two major transmission mains that cross several earthquake faults before blending within the Linden and Evans Reservoirs in Riverside.

Riverside has experienced some earthquakes in the past, with neither significant water supply shortages nor disruptions. Table 4.3-2 is a list of some of the major earthquakes in Southern California during the last twenty years. Stronger earthquakes can result in major water service disruptions either due to facility damage, or to power outages. In some cases, harmful microorganisms could migrate into the distribution system because of pipe breaks and/or damage to water disinfection facilities. It could take several days (or more) to restore the water system to the community at large depending on the severity of damage, especially after the first 72 hours after a serious quake.

Table 4.3-2
Major Earthquakes in Southern California since the 1990s

Major Earthquakes in Southern California since the 1990s		
Date	Name	Magnitude
Feb-90	Upland	5.5
Jun-91	Sierra Madre	5.8
Apr-92	Joshua Tree	6.1
Jun-92	Landers	7.6
Jun-92	Big Bear	6.7
Jan-94	Northridge	6.8
22-Feb-03	Big Bear	5.4
16-Jun-05	Yucaipa	4.9

4.3.3 High Groundwater Level (Liquefaction)

Another potential hazard related to earthquake is soil liquefaction. Liquefaction is a phenomenon that occurs in loose, saturated, granular soils when subjected to long duration, strong ground shaking. High groundwater levels shallower than the threshold (between 30 and 50 feet below ground surface) may at some locations increase the potential for liquefaction during very strong earthquakes. Some of the wells in the North Orange area of Riverside are located in areas prone to liquefaction. Some RPU wells located in the pressure zone of Bunker Hill groundwater basin, where groundwater levels occasionally are shallower than the threshold in some areas, may also be vulnerable to liquefaction. Some segments of the major water transmission mains from Bunker Hill groundwater basin are located within the potential liquefaction zone. RPU is in the process of upgrading some sections of the Waterman Transmission Main. The proposed Riverside-Corona Feeder (RCF) Transmission main to be built by WMWD (2004) from Bunker Hill basin through Riverside to Corona could also be used to convey water to RPU distribution system during emergencies.

RPU cooperatively with other local water agencies (the Upper Santa Ana Watershed Association, USAWRA) developed and implemented a "high groundwater" mitigation plan (Section 2). The "high groundwater" mitigation plan being implemented will help reduce potential for liquefaction in the Bunker Hill basin. Similar reductions in liquefaction potential may occur in the North Orange area because of increased

groundwater production from the area after the construction of wellhead treatment facilities (Section 6).

4.3.4 Floods

Some RPU wells are located within the flood plains of the Santa Ana River, and thus vulnerable to flooding. For example, in 1995, floods washed away the superstructure of Gage 21 well. The sub-surface well bore was subsequently properly abandoned. Gage 98-1 well replaced Gage 21 well, with funding assistance from the Federal Emergency Management Agency (FEMA). The other wells most vulnerable to flooding include some Warren Tract wells. Some of the Warren Tract wells were replaced upstream with Cooley J well. The recently completed Seven Oaks Dam upstream will reduce the magnitude, frequency and vulnerability of wells to flooding, while increasing available water rights.

Potential hazards from floods are not limited to physical damage and/or loss of water infrastructure. Curriero, Frank C. *et al.* (2001), found that more than half of the waterborne disease outbreaks in the United States in the past 50 years were preceded by heavy rainfall. Outbreaks due to surface water contamination, which accounted for approximately 24 percent of all outbreaks, were more associated with extreme precipitation occurring during the month of the outbreak and one month prior, while outbreaks due to groundwater contamination, which accounted for approximately 36 percent of all outbreaks, were more associated with extreme precipitation occurring within a three month lag preceding the outbreaks.

RPU has implemented many measures in order to minimize adverse impacts of flooding on groundwater contamination. For example, RPU increased the thickness of well seals for newer wells to greater depths than required by the State of California water well standards. RPU also screens newer wells generally deeper than 400 feet below ground surface. Additional chlorination stations (Section 6) were added further upstream of the major transmission mains thereby increasing the disinfection contact time. Prior to 2003, wells in the North Orange area used to pump directly into the distribution system. The North Orange wells were connected by a major transmission main to the Linden and Evans Reservoirs for increased disinfection contact time.

4.3.5 Groundwater Contamination

Potential hazards that could result in groundwater contamination include migrating contaminant plumes, chemical spills, agricultural return drainage, leaky underground storage tanks (USTs), and septic systems. Chemical spills, and leaking USTs initially tend to affect small number of wells, whereas contaminant plumes, agricultural return drainage, and septic systems may impact regional aquifers extensively.

Previous improper waste disposal practices have created many groundwater plumes that have degraded and will continue to impact Riverside wells (Section 6). Groundwater contamination may interrupt water supplies for significantly extended period. However,

groundwater contamination/chemical spills may sometimes have Potentially Responsible Parties (PRP) who can be made to pay mitigation costs. PRPs are mitigating groundwater contamination due to organic solvents thus assuring continued availability and reliability of water supplies affected by those plumes (RPU, 1999).

In 2001, RPU reached agreement with the manufacturers of the pesticide dibromochloropropane (DBCP) that have contaminated wells in the Riverside groundwater basins. Under the agreement, DBCP manufacturers agree to pay the capital costs and 40 years of operating and maintenance costs of facilities to remove DBCP from production wells. RPU was reimbursed for Granular Activated Carbon (GAC) treatment plants that enable RPU to produce additional water from wells previously abandoned to contamination.

In the late 1980s and early 1990s, water produced from wells connected to the Waterman Transmission main was used to blend impaired water produced from the Gage wells to meet potable drinking water standards. However, water quality within the Gage Canal has improved since the Air Force and Lockheed constructed wellhead treatment facilities, and the replacement of the most contaminated Gage wells with deeper wells (Gage 92-1, Gage 92-2, Gage 92-3, and Gage 98-1). Those treatment facilities are expected to remove additional contaminants, such as DBCP.

In 1999, RPU prepared a Water Supply Contingency Plan (WSCP) that addressed the potential water quality issues facing the City of Riverside (Riverside), especially from the Crafton-Redlands plume(s). The WSCP (Section 6) also included Contingency Plans for addressing issues related to more stringent water quality regulations. The California Department of Health Services approved the WSCP.

4.3.6 Terrorist Acts

In 2003, RPU completed the mandated Vulnerability Assessment (VA) and in 2004 updated the ERP.

4.3.7 Mutual Aid Agreement and Emergency Water Connections to other Agencies

RPU is a member of the USAWRA that has assisted its members in developing mutual aid agreements for use during emergencies. Table 4.3-3 shows the inter-ties between water systems that can be used to deliver water from other purveyors to assist Riverside during short-term emergencies. RPU is also a member of the Water Agency Response Network (WARN).

Table 4.3-3
Water Systems Connections

Agency	Agency/Name	Location	Capacity (gpm)	Emergency /Imported	Direction	Riverside Pressure Zone
WMWD	Mills Connection 24-C	Cannon Rd	13,400	Imported	To Riverside	1600 Zone
WMWD	Van Buren Highline	Mockingbird Canyon Rd	13,400	Imported/ Wholesale	To/From Riverside	1200 Zone
WMWD	Warmington	Warmington St	1,000	Emergency	From Riverside	1100 Zone
Home Gardens		Harlow Av	1,500	Wholesale	From Riverside	925 Zone
Corona		Sampson Av	1,500	Emergency	To/From Riverside	925 Zone
San Bernardino		North of Sixth St	2,000	Emergency	To/From Riverside	Gravity
East Valley WD		Sixth St near Pedley	4,000	Emergency	From Riverside	Gravity
WMWD	Lusk Highland (Box Springs)	Sycamore Canyon Blvd	1,500	Emergency	To Riverside	1600 Zone
WMWD	Praed/Lake Knolls	Lake Knoll Park	1,500	Emergency	To Riverside	1400 Zone
California Filter Plant		Shelby Dr	4,000	Emergency	To Riverside	Gravity
WMWD	Whitegates	Near Whitegates 2 Res	1,100	Emergency	To Riverside	1750 Zone

Source: MWH (2005) RPU Water Master Plan

4.4 Prohibitions, Penalties and Consumption Reduction Methods

4.4.1 Prohibitions

During a mandated reduction, the RPU will intensify its water conservation programs, especially public education. RPU promotes efficient water use including non-potable uses such as landscaping and irrigation (Chapter 19.67 of the Riverside Municipal Code). Recycled water from the wastewater treatment plants may be used for street cleaning.

Appendix D.1 and Appendix D.2 are adopted water shortage and “No-Waste” Ordinances, respectively for the City of Riverside. The RPU ordinances include prohibitions against wasteful water use practices. Water Rule #15 and Riverside Municipal Code Section 13.04.120 prohibits running waste water upon streets: "It is unlawful for any Person using water for irrigation, domestic or other use or purpose, to run any waste water or allow the same to run onto or upon any public street in the City, but each person must care for and dispose of his own waste water."

Water Rule #9 regarding water shortages states “In the event of any actual or threatened shortage of water supply, and during the period of such shortage, the Water Utility shall apportion the available supply of water among its Customers in the most equitable manner possible to continue service fairly and without discrimination, except that preference shall be given to such service as is essential to the public interest and to the

preservation of life and health.” The rationing process is in stages depending on the severity of the drought (Table 4.1-1). RPU has a water-rationing plan - the first stage encourages voluntary rationing. As the drought becomes more severe, there might be reduction in sales of water to outside agencies and more aggressive distribution of non-potable water for non-potable uses.

Table 4.4-1
Mandatory Prohibitions

DWR UWMP Review Table 26 Mandatory Prohibitions	
Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Allowing water to run on streets	All
Street/sidewalk cleaning	
Leaking fixture replacement	All

4.4.2 Consumption Reduction Methods

Table 4.4-2 is the summary of consumption reduction methods. As discussed earlier public awareness campaign can achieve some reduction in demand (voluntary rationing). RPU also offers rebates to encourage structural conservation, i.e., reduce water demand (ultra-low flush toilet replacements, high efficiency washing machines, etc.). RPU has a water rate structure that promotes water efficiency (Section 4.4.3).

Table 4.4-2
Consumption Reduction Methods

DWR UWMP Review Table 27 Consumption Reduction Methods		
Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Public education	All	7
Water efficiency pricing	All	7
Voluntary rationing	1	7
Mandatory rationing	2 through 4	Up to 50%
Plumbing fixture replacement	All	
Demand reduction program	All	

The reduction goal would be to balance supply and demand. See Section 4.6 details regarding the mechanism for monitoring reductions in consumption.

4.4.3 Penalties

RPU maintains a tiered commodity water rate and seasonal water rates to encourage efficient water use [<http://www.riversidepublicutilities.com/waterrules.htm>] in addition to a fixed monthly charge based on meter size. Table 4.4-3 shows the “quantity rate” for a residential RPU customer (SCHEDULE WA-1) within the City of Riverside. Notice that the marginal rate nearly doubles after usage exceeds 1,500 cubic feet per month.

Table 4.4-3
Tiered and Seasonal Water Rates

SCHEDULE WA-1 Quantity Rate within City of Riverside			
Effective Date: June 1, 2005			
	Potable Water Quantity	June-October	November - May
First	1,500 cubic feet per month	\$ 0.62	\$ 0.62
	1,600 - 3,500 cubic feet per month	\$ 1.26	\$ 1.14
	3,600 - 6,000 cubic feet per month	\$ 1.52	\$ 1.22
All over	6,000 cubic feet per month	\$ 1.92	\$ 1.31

The water waste ordinance includes penalties for excessive water usage. According to Water Rule #15, “Whenever it appears to the Director that water delivered by the Water Utility is being used in violation of the terms of this Rule, he [/she] shall give written notice to the person so wasting water of his [/her] intention, after a reasonable time to be therein stated, to shut-off the water supply to the Person's Premises.”

Table 4.4-4
Penalties and Charges

DWR UWMP Review Table 28 Penalties and Charges	
Penalties or Charges	Stage When Penalty Takes Effect
Tiered water rates	All
Higher seasonal water rates	All
Water wastage (Water Rule #15)	All

4.5 Analysis of Revenue Impacts of Reduce Sales During Shortages

For the 2003-2004 fiscal year gross revenues from water sales totaled over \$49.6 million and operating expenses exceeded \$33.8 million¹. Water retail sales and wholesale sales account for about 62% of total revenues. Reduction in water sales due to shortages could affect both revenue and expenses.

¹ Riverside Public Utilities Department - 2003-2004 Financial Statements

4.5.1 Revenue Impacts

RPU typical water rate includes the following components: a fixed monthly charge, a prorated commodity charge based on consumption with increasing marginal rates and adjustments for seasonality, energy factor adjustment, a surcharge for customers not within city limits, and a Water Conservation and Reclamation surcharge. Table 4.5-1 includes summaries of potential measures that RPU can implement to mitigate some revenue impacts due to shortages. Revenue from fees such as fixed monthly charges, development related fees, and backflow protection program would not be impacted by reduction in water usage due to droughts.

Table 4.5-1
Potential Measures to overcome revenue impacts

DWR UWMP Review Table 29	
Proposed measures to overcome revenue impacts	
Names of measures	Summary of Effects
Rate adjustment	Increase revenue
Use of existing reserves	Decreases reserve
Refinance existing bonds or issue new bonds	Decrease expenses

RPU has many options to cushion reduction in revenues due to reduced demand by its retail customers. RPU maintains reserves that can offset minor revenue impacts. Riverside Water Financial Plan reserve levels reached \$9 million by July 2004 of which \$1.8 million is reserved as revenue contingencies due to weather. That level of reserves (\$9 million) amounts to about 29% of wholesale (\$0.149 million) and retail water sales (\$30.5 million) in fiscal year ending June 2004.

RPU could revise its water rules, reserve levels, and rates to specifically address significant reductions in water sales due to mandatory rationing as needed. For example, RPU could also raise water rates to maintain reserve levels required by bond covenants. Other potential measures include refinancing or rescheduling of existing bonds (if lower rates can be obtained).

4.5.2 Expenditure Impacts

Some expense categories such as purchased energy, treatment costs, operations and maintenance (O&M) and contribution to the City general fund would be less because of reduced pumpage and/or revenues. RPU estimated a reduction in energy costs of \$350,000 per year assuming a 10% reduction in water demand. RPU can reduce or avoid some water treatment related costs by choosing to operate wells that require the least amount of treatment. RPU could also pump the most efficient wells to further reduce energy costs. RPU could investigate additional energy savings from switching to cheaper rate schedules based on time of use (TOU) by taking advantage of distribution system reservoir storage (Section 4.3.1).

Expenditure for purchased water would be reduced significantly if not totally eliminated. Purchased water costs about \$525 per acre-foot in 2005 or about \$525,00 per year saving for each 1,000 acre-feet reduction in purchased water (Table 2.3-3). Expense categories such as depreciation, interest expense and maintenance would remain fairly the same or experience slight reductions. It is anticipated that expenditure on water conservation would increase to induce significant reductions in water demand due to multi-year drought. Water conservation budget is also funded from the Water Conservation and Reclamation Surcharge on water bills.

Table 4.5-2 summarizes potential measures that RPU can implement to mitigate some revenue and expenditure impacts.

Table 4.5-2
Potential Measures to Overcome Expenditure Impacts

DWR UWMP Review Table 30 Proposed measures to overcome expenditure impacts	
Names of measures	Summary of Effects
City Council could reduce general fund transfer (GFT)	Reduce
Reduce or eliminate amount of purchased [imported] water	Reduce
Delay some capital expenditure	Reduce
Reduce energy costs by utilizing reservoir operations for Time of Use (TOU) rates	Reduce

4.6 Draft Ordinance and Use Monitoring Procedure

Appendix D.1 is the water shortage ordinance. RPU has mechanisms in-place (Table 4.6-1) for monitoring compliance with actual mandated reductions, some of which were discussed earlier in Section 4.4. Water sales to customers are metered and billed monthly. RPU implements a meter maintenance program to assure accuracy. Collected revenues from water sales are incorporated into the monthly financial reports produced by the RPU Finance Section. RPU customer billing system simultaneously reports water usage for current and previous years in bills sent to customers. The billing software can be used to evaluate compliance with mandated reductions.

Table 4.6-1
Water Use Monitoring Mechanisms

DWR UWMP Review Table 31 Water Use Monitoring Mechanisms	
Mechanisms for determining actual reductions	Type data and quality of data expected
Monthly meter reading	Water usage in ccf. Good quality.
Comparison of current usage with last year's usage	% reduction in usage. Good quality.

RPU has capability to determine reductions in either or both of the water production and consumption. In 2004, RPU completed a major upgrade of the SCADA system of the water distribution system. All production wells are metered, and monitored. The upgrade to the SCADA system is capable of recording potable water production and water levels within potable water reservoirs. Water levels of selected wells are regularly monitored and charted. Flow meters installed at pump stations and booster stations can be read automatically through the SCADA system to determine usage.

RPU operates a water quality-blending model that optimizes water quality for selected parameters within the distribution system. That model determines optimal daily production and is run everyday to determine pumpage operations to assure full compliance with water quality regulations. RPU closely monitors daily production, and files annual reports with the Western-San Bernardino Watermasters that administer the 1969 Judgment on water rights. The Western-San Bernardino Watermasters file annual reports with the Superior Courts that oversee the 1969 Judgment. The annual recordations are also forwarded to the California State Water Resources Control Board.

5. RECYCLED WATER PLAN

5.1 Coordination

Table 5.1-1 lists the Agencies that were contacted and/or assisted in providing data and/or review regarding this recycled water plan.

Table 5.1-1
Participating Agencies

DWR UWMP Review Table 32 Participating agencies	
AGENCIES	Participated
<i>Water Agencies</i>	
City of Riverside Public Utilities Department	Yes
<i>Wastewater agencies</i>	
City of Riverside Public Works Department	Yes
<i>Planning Agencies</i>	
City of Riverside Planning Department	Yes

5.2 Wastewater Quantity, Quality and Current Uses Water

5.2.1 Wastewater Collection and Treatment Systems

The City of Riverside Public Works Department operates and maintains a municipal wastewater treatment plant – the Riverside Regional Water Quality Control Plant (RRWQCP). The City also operates and maintains the wastewater collection system. The wastewater collection system includes over 1,100 miles of gravity sewers ranging in size from 6 to 48 inches in diameter. Appendix E.1 shows a schematic of the wastewater collection system. The average daily wastewater inflow to the RRWQCP is currently about 33 million gallons per day (MGD). The current capacity is about 40 MGD and the ultimate master planned capacity is 60 MGD.

The service area of the RRWQCP extends beyond the water service area of RPU (Section 2). RRWQCP facilities now provide primary, secondary, and tertiary treatment to sewage effluents from the City of Riverside, and other unincorporated areas of Riverside County served by the Jurupa, Rubidoux, and Edgemont Community Services Districts.

5.2.2 Wastewater Collected and Treated

Table 5.2-1 shows the historic and projected volumes of recycled water in acre-feet per year. The projected flow to the plant includes historical growth, increased flows from Jurupa Community Services District and up to 4.4 MGD from the Highgrove area.

Table 5.2-1
Annual Volume of Recycled Water

DWR UWMP Review Table 33 Wastewater Collection and Treatment - AF Year							
Type of Wastewater	2000	2005	2010	2015	2020	2025	2030
Wastewater collected and treated in RRWQCP ¹ Service	35,533	37,214	42,707	45,509	48,311	51,113	53,916
Volume that meets recycled water standard	35,533	37,214	42,707	45,509	48,311	51,113	53,916

¹RRWQCP - Riverside Regional Water Quality Control Plant

Data for years 2005 through 2030 are projected and were obtained from the City of Riverside Public Works Department

5.2.3 Methods of Wastewater Disposal

Discharge of tertiary effluent (recycled water) occurs at five locations within Reach 3 of the Santa Ana River. A portion of the tertiary effluent is diverted for recycled water use and the remaining to the Hidden Valley Wetlands. Table 5.2-2 summarizes how treated wastewater is discharged. The Hidden Valley Wetlands (HVW) is used for additional wastewater treatment (nitrogen removal).

Table 5.2-2
Disposal of Treated Wastewater

DWR UWMP Review Table 34 Disposal of treated wastewater (non-recycled and recycled) acre-feet per year								
Method of disposal	Treatment Level	2000	2005	2010	2015	2020	2025	2030
Diverted to Hidden Valley Wetlands (HVW)	Tertiary	13,451	11,209	12,330	12,330	12,330	12,330	12,330
Discharge to Santa Ana River	Tertiary	22,082	26,005	30,377	33,179	35,981	38,783	41,586
		35,533	37,214	42,707	45,509	48,311	51,113	53,916

Effluent flowing downstream of Prado dam is available for groundwater recharge by downstream water agencies.

5.2.4 Current Uses of Recycled Water

Table 5.2-3 shows the current uses of recycled water include release downstream to meet legally mandated downstream discharge obligations.

Table 5.2-3
Recycled water uses– Actual and Potential

DWR UWMP Review Table 35 Recycled Water Uses - Actual and Potential (AFY)								
User Type	Treatment Level	2000	2005	2010	2015	2020	2025	2030
Golf Course	Tertiary	139	140	140	140	140	140	140
Landscape (Urban Forest)	Tertiary	1	2	2	2	2	2	2
Downstream discharge obligations ¹	Tertiary	15,250	15,250	15,250	15,250	15,250	15,250	15,250
Wetlands & Wildlife Habitat	Tertiary+nitrates	13,451	11,209	12,330	12,330	12,330	12,330	12,330
Industrial	Tertiary	126	126	126	126	126	126	126
RERC Power Plant ²	Tertiary			110	110	110	110	110
Other recycled water use	Tertiary		60	823	3,079	5,328	7,575	9,825
Total		28,967	26,787	28,781	31,037	33,286	35,533	37,783

¹Prado settlement -1969 Judgment. Some of the effluent flowing downstream of Prado dam is used for groundwater recharge.

²RERC = Riverside Energy Resource Center

The Prado settlement (Superior Court, 1969) requires RRWQCP to annually discharge 15,250 acre-feet (13.38 MGD) of effluent (adjusted for quality but not less than 13,420 acre-feet) into the Santa Ana River to assist the Western Municipal Water District (WMWD) in meeting its discharge obligations downstream of Prado Dam. The discharged tertiary effluent blended with other flows within the Santa Ana River naturally replenishes downstream aquifers. Some downstream water agencies such as the Orange County Water District (OCWD) divert flow from the Santa Ana River to spreading basins to facilitate additional replenishment of their aquifers.

RPU sells a portion of the tertiary effluent for non-potable purposes where economically feasible (Table 5.2-3). RPU purveys about 140 acre-feet of recycled water for irrigation of a golf course, landscape median on Van Buren/Jurupa and to a commercial user. The planned use of recycled water by the Riverside Energy Resource Center (RERC) is discussed in Section 5.3. RPU is proposing a Recycled Water Agricultural Program to deliver some of the tertiary effluent to the Gage Canal Company and Western Municipal Water District (Section 5.3.6).

5.3 Potential and Projected Use, Optimization Plan with Incentives

5.3.1 Potential Uses of Recycled Water

Potential uses of recycled water within the RPU Service Area include agricultural irrigation (Gage Exchange), landscape irrigation, wildlife habitat enhancement, wetlands (HVW), industrial reuse, and groundwater recharge. Table 5.2-3 shows that RPU and Public Works Department are currently using a portion of the tertiary effluent for many of the identified potential uses. Additional discussions on other potential uses can be found in following sections.

5.3.2 Technical and Economic Feasibility of Serving the Potential Uses

In 1992, RPU and the Public Works Department jointly hired James M. Montgomery Consulting Engineers, Inc. (JMM) to prepare a Recycling Master Plan. JMM (1992) estimated available recycling water quantity, market assessment, and the development of a core distribution system. In 1995, RPU staff analyzed the alternatives and compared them with other existing water sources. Table 5.3-1 and 5.3-2 summarize the reuse alternatives including those identified by JMM.

Table 5.3-1
Recycled water Reuse Alternatives

Alternative	Capital cost	Total annual cost	Yield (AF)	\$/acre-foot
Parks & Freeway	\$8.28m	\$0.79m	850	930
JMM ¹ Core system	\$45.00m	\$4.41m	11,000	600
Rancho La Sierra Golf Course	\$4.04m	\$0.53m	1,210	431
Airport/La Sierra	\$10.68m	\$1.44m	2,000	798

¹JMM now Montgomery-Watson-Harza

Source: RPU 1995 data on recycled water reuse.

Table 5.3-2
Cost effectiveness of Recycled water Alternatives and other programs

Alternative	Water Source	Capital cost	Yield (AF)	\$/acre-foot
A: New non-potable distribution system				
Parks & Freeway	RRWQCP ¹	\$8.28m	850	930
JMM ² Core system	RRWQCP ¹	\$45.00m	11,000	600
Rancho La Sierra Golf Course	RRWQCP ¹	\$4.04m	1,210	431
Airport/La Sierra	RRWQCP ¹	\$10.68m	2,000	798
B: New booster stations and transmission lines				
Gage Canal	RIX ³	\$9.34m	12,100	218
Gage Canal	RRWQCP ¹	\$12.74m	12,100	210
C: Existing programs				
Gage Exchange	Wells	\$0.67m	6,000	90

¹RRWQCP = Riverside Regional Water Quality Control Plant

²JMM now Montgomery-Watson-Harza

³RIX = [City of San Bernardino and City of Colton] Rapid Infiltration eXtraction Tertiary Plant.

Source: RPU 1995 data on recycled water reuse.

RPU chose to expand Gage exchange (Section 2) because it was more cost effective.

In 2003, Parsons Engineering Consultants (Parsons) prepared a Recycled Water Phase I Feasibility Study and Citywide Masterplan. Parsons developed a more detailed plan including validating future demands. Parsons Engineering Consultants (Parsons, 2003) updated the projected volume of available wastewater determined by JMM (1992) and identified potential customers for optimal use of recycled water within the City of Riverside (Table 5.3-3). RPU reviewed the Recycled Water Masterplan to evaluate the feasibility of expanding the use of the recycled water. Recycled water could replace potable water currently used for irrigation of other golf courses and parks, reducing the demand on potable water.

Parson (2003) evaluated the cost effectiveness and benefits of using recycled water. The annual costs for recycled water ranges from \$264 to \$409 per acre-foot, depending on the financing option. Parsons (2003) estimated that an annual non-potable reuse potential of 20,400 acre-feet within the City and which does not include demands within the City's 15,000-acre southerly sphere of influence. The estimated capital costs for citywide distribution system is \$65 million (2003 dollars).

Table 5.3-3
Assessment of Direct Non-potable Reuse Market

Recycled Water Average Annual Demand Assessment of Direct Non-potable Reuse Market		
	Reuse Potential (Acre-feet/year)	
	Existing Establishment	Future Establishment
A Within the City Limits		
Landscape Irrigation		
Cemeteries	253	
Colleges/Universities/Schools	2,256	176
Golf Courses	1,335	400
Parks	1,744	895
Miscellaneous	268	270
Freeway Irrigation and City Greenbelts	793	100
Industrial - Landscape Irrigation	422	
Minor Potential Users	1,000	
Subtotal - Landscape Irrigation	8,071	1,841
Industrial Process/Commercial		
Commercial	500	300
Industrial - Processes	86	850
Subtotal - Industrial Process/Commercial	586	1,150
Total Within City Limits	8,657	2,991
Total Existing and Future	11,648	
B Additional Users Along City's Northerly Boundary	1,310	
C Potential User's Along City's Southerly Boundary	1,360	
D Potential Gage Canal Agricultural Irrigation Usage	6,000	
Grand Total (A + B + C + D)	20,318	

Source: Parsons (2003)

5.3.3 Projected Use of Recycled Water in Service Area

Parsons (2003) estimated that about 18 MGD (20,400 acre-feet per year) of water is available for non-potable uses and groundwater recharge after adjusting for downstream discharge obligations from Prado settlement and potential evaporation losses within the HVWEP.

Table 5.2-3 and Table 5.3-1 show the actual and planned sales of recycled water through 2030. RPU projects purveying approximately 1,200 acre-feet per year of recycled water by 2010, and an additional 9,000 acre-feet per year by 2030 (Table 5.3-4).

Table 5.3-4
Projected Recycled Water Uses – Actual and Potential

DWR UWMP Review Table 36 Projected Future Use of Recycled Water in Service Area - AF Year					
	2010	2015	2020	2025	2030
Projected use of Recycled Water	1,200	3,450	5,700	7,950	10,200

RPU is developing a peaking power plant known as the Riverside Energy Resource Center (RERC) on a 16- acre site adjacent to the RRWQCP. The RERC is projected to require about 32 MG per year of recycled water (about 107 acre-feet, Table 5.2-3).

5.3.4 Comparison of Projected Usages

The RPU 2000 UWMP projected use of about 2,000 (1,861+139+1) acre-feet of recycled water for non-potable uses by 2005 (Table 5.3-5). The projected volume did not include committed discharges to support wetlands nor downstream discharge obligations. In 2005, an estimated 268 (140+2+126) acre-feet of recycled water would be used. The expanded use of Gage Exchange, as explained earlier, was then more cost effective than recycled water reuse.

Table 5.3-5

Comparison of Projected Recycled Water Usage (2000 UWMP and 2005 UWMP)

DWR UWMP Review Table 37 Recycled Water Uses - 2000 Projection compared with 2005 actual - AFY				
User type	2000 UWMP Projection for 2005	2004 actual use	2005 ¹ UWMP Projected use	Difference between 2000 UWMP & 2005 UWMP Projections
Golf Course	139	137	140	1
Landscape (Urban Forest)	1	2	2	2
Downstream discharge obligations (1)	15,250	15,250	15,250	-
Wetlands & Wildlife Habitat	13,451	10,088	11,209	(2,242)
Industrial	126	126	126	-
Other recycled water use	1,861	0	60	(1,801)
Total	30,827	25,603	26,787	(4,040)

¹ Full data for 2005 were not available when this report was prepared. UWMP = Urban Water Management Plan

Since 2000, RPU has invested in additional planning to increase use of recycled water to meet increasing demand that followed the recession of the early 2000s. RPU completed Recycled Water Phase I Feasibility and Citywide Master plan (Parsons, 2003).

5.3.5 Incentive Programs to Encourage Use of Recycled Water

Establishing standards for the use of recycled water is one of policies included in the City draft General Plan 2025. Appendix E.2 is the Recycled Water Reuse ordinance. RPU has experience developing marketing and incentive programs for services it provides such as electricity, and water. In May 2004, City Council adopted a resolution establishing recycled water rates (Appendix E.3). Existing customers are charged a commodity rate of \$0.30 per hundred cubic feet (ccf), which is lower than the \$0.93 per ccf for existing customers under the irrigation metered service (WA-3). Table 5.3-6 shows projected use of recycled water in acre-feet expected from such incentives.

Table 5.3-6

Methods to Encourage Recycled Water Use

DWR UWMP Review Table 38 Methods to Encourage Recycled Water Use					
Actions	AF of use projected to result from this action				
	2010	2015	2020	2025	2030
Financial incentives & Revised recycled/non-potable water rules	1,200	3,450	5,700	7,950	10,200
Total	1,200	3,450	5,700	7,950	10,200

5.3.6 Plan for Optimizing the Use of Recycled Water

Discussions in earlier sections included plans for optimizing the use of recycled water. Under the proposed Recycled Water Agricultural Program, the RPU would design and construct a recycled water distribution system, consisting of pipelines and booster stations to serve existing agricultural operations, wholesale nurseries and other agencies. Effluent from the RRWQCP would be incrementally diverted from the plant and delivered to two open concrete lined canals for delivery to the Gage Canal Company (Gage Exchange) and the Western Municipal Water District for subsequent delivery to end users. Both agencies currently use local groundwater and have existing facilities to serve non-potable customers.

The Plan identifies a market of approximately 20,400 acre-feet per annum for agricultural operations. Planned facilities include approximately 35,000 linear feet of 36-42 diameter pipeline, 11,000 linear feet of 24-30 diameter pipeline, a 1,000 horsepower booster pumping station, and turnout and control structures for delivery of water to the canals.

6 WATER QUALITY IMPACTS ON RELIABILITY

6.1 Introduction

In 2001, the Board of Public Utilities formally adopted "non-detect at the tap" as the primary treatment goal for man-made contaminants such as trichloroethylene (TCE), dibromochloropropane (DBCP). In October 2002, the Board of Public Utilities adopted the goal of safeguarding the supply and quality of RPU water resources for the next 100 years. One of the key programs involves developing a source water protection plan for the North Orange well fields (Section 6.5). Over the years, RPU has developed the technical (including legal), managerial and financial (TMF) capacity and experience to implement management strategies to satisfactorily address water quality concerns including treatment without impairing long-term reliability.

6.2 Quality of Water Sources

As discussed earlier in Section 2, the sources of water include groundwater, imported water, and recycled water. RPU produces groundwater from the following local basins: Bunker Hill basin, Riverside North, and Riverside South basins. Production from some of the wells is treated at wellhead or regional treatment facilities prior to delivery to the major transmission mains (Appendix B.4). The wells are spatially distributed within the groundwater basins.

Production from the wells and/or treatment facilities is blended and chlorinated within the major transmission mains prior to distribution from the Linden and Evans reservoirs. The blending and the treatment make the system water less vulnerable to contamination at individual wells.

RPU (2005) regularly monitor the quality of its water sources. More than 14,000 samples were analyzed in 2004. Annually, RPU distributes summary reports on the quality of its water to its customers (i.e., CCR - Consumer Confidence Report). Appendix F.1 shows the typical concentration of blended water. The quality of the blended water RPU meets all applicable drinking water standards.

6.2.1 Groundwater Quality

In general, the natural quality of water in local groundwater basins is very good and reliable (RPU, 2004). There are many contaminant plumes migrating within the local basins. Groundwater contaminant plumes and on-going mitigation programs are discussed in Section 6.3.

Hamlin et al (2002) found “most samples of ground water in the Inland Basins [Bunker Hill, Riverside North and South] were a calcium-bicarbonate type, which may reflect the quality of recharge originating in pristine, high-altitude areas of the adjacent San Gabriel and San Bernardino Mountains.” Hamlin et al (2002) identified some of the other factors that influence local groundwater quality as: recharge from the Santa Ana River, discharge of treated wastewater to the river, and use of imported water in the basin.

TDS and nitrates are some of the many water quality parameters that can represent the quality of the groundwater basins. Appendix F.2 and Appendix F.3 respectively show the distribution of TDS and nitrates in some selected wells in Bunker Hill groundwater basins, the primary source of drinking water for RPU. Both figures show spatial variations in groundwater quality. Appendix F.4 shows the typical TDS values for RPU owned wells in all groundwater basins from 1990. The blended concentration of TDS of system water ranged between 330 mg/L and 410 mg/L during the reported period.

6.2.2 Imported Water Quality

Imported water purchased is surface water from the State Water Project (SWP) that is treated at the Metropolitan Water District (MWD) owned Mills Filtration Plant in Riverside prior to delivery to RPU by the WMWD. SWP water quality is maintained and governed by the standards established by the California Department of Water Resources (DWR). The salinity (TDS) of SWP delivered to WMWD is usually less than 300 mg/L, but was as high as 430 mg/L during the 1977 drought (WMWD, 2005). DWR and/or MWD regularly conduct sanitary surveys and monitor the quality of the water according to the applicable standards and regulations. MWD completed a source water assessment of SWP in 2002.

WMWD (2005) does not project water supply changes due to water quality (Table 6.2.1). RPU does not project changes in SWP water quality will affect water management strategies because imported water is further treated at the Mills plant prior to distribution.

Table 6.2-1
Water Supply Changes Due to Water Quality

WMWD UWMP Table 39 Current & projected water supply changes due to water quality - percentage						
Water Source	2005	2010	2015	2020	2025	2030
Potable: SWP	0%	0%	0%	0%	0%	0%

Source: WMWD Draft 2005 UWMP

6.2.3 Recycled Water Quality

Regarding the quality of recycled water, the Riverside Regional Water Quality Control Plant (RRWQCP, Section 5) treats effluent to tertiary standards and monitors the quality to ensure compliance with the NPDES permit. Appendix F.5 is the typical effluent water quality from the RRWQCP.

6.2.4 Projected Water Quality Impacts

Table 6.2-2 summarizes the assessment of likely impacts of how water quality could affect water management strategies and supply reliability. There is no water quality impacts projected to impact RPU sources of water between now and 2030, i.e., 100% of each of the water sources would be available. Reliability concerns other than those due to quality are covered in Section 7 of this UWMP, while Section 4 describes the contingency and implementation plan for handling water shortages.

Table 6.2-2
Projected RPU Water Supply Changes Due to Water Quality

DWR UWMP Review Table 39 Current & projected water supply changes due to water quality - percentage						
Water Source	2005	2010	2015	2020	2025	2030
Bunker Hill - Gage system wells	0%	0%	0%	0%	0%	0%
Bunker Hill - Waterman system wells	0%	0%	0%	0%	0%	0%
Riverside - North Basin	0%	0%	0%	0%	0%	0%
Riverside - South Basin	0%	0%	0%	0%	0%	0%
Imported water ¹ - (Western Municipal Water District)	0%	0%	0%	0%	0%	0%
Recycled Water	0%	0%	0%	0%	0%	0%

¹From Table 6.2-1.

6.3 Water Quality Management Measures

Potential hazards that could impact the quality of groundwater from local basins include migrating contaminant plumes (Appendix F.6), chemical spills, agricultural return drainage, leaky underground storage tanks (USTs), and septic systems. Chemical spills, and leaking USTs initially tend to affect small number of wells, whereas contaminant plumes, agricultural return drainage, and septic systems may impact regional aquifers extensively.

Previous improper waste disposal practices created many groundwater plumes that have degraded and could continue to impact RPU wells. RPU implemented several measures to address groundwater contamination that affected its water sources. Some of the implemented measures included the following:

- Well replacement
- The development of a water quality blending optimization model
- The development of a Water Supply Contingency Plan (WSCP)
- Wellhead treatment pilot studies
- Preparation of a water treatment feasibility study, wellhead treatment
- The construction of a water transmission main from the North Orange well field to the Linden-Evans reservoirs to further improve blending capacity.

RPU was able to improve the quality of its domestic water by successfully implementing a comprehensive strategy that emphasized pollution prevention and source water

protection. Increased implementation of demand side management (DSM) measures such as water recycling, water conservation would further reduce the need to rely on poorer quality sources of water.

RPU developed a blending optimization model to ensure compliance with all mandatory health-based drinking water regulations. In 1993, RPU completed a *Water Treatment Feasibility Study* (Boyle Engineering Corporation, 1993). In 1999, the California Department of Health Services (DHS) approved the WSCP developed by RPU (Appendix F.7). The WSCP (RPU, 1999) addressed the best strategy for addressing the various water quality parameters of immediate and future concern and pending drinking water regulations including arsenic, radon, and perchlorate.

RPU collaborated with Federal, state, and local regulators overseeing cleanup of groundwater plumes and provided assistance, where necessary. Potentially responsible parties (PRPs) have or are mitigating groundwater contamination plumes such as the Norton Air Force Base, Rialto (perchlorate), Santa Fe, and Crafton-Redlands (Appendix F.6). The PRP for Crafton-Redlands plume constructed wellhead treatment facilities to treat TCE and perchlorate in that plume. Some treatment facilities can also remove additional organic compounds. U.S. EPA installed some barrier wells and treatment facilities designed to intercept the Newmark and Muscoy plumes upstream of RPU wells (Appendix F.6).

RPU monitored cleanup measures, and where necessary initiated and funded cooperative monitoring of water quality parameters near/within suspected plumes. RPU assisted the Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Department of Health and Human Services (DHHS) in conducting *Public Health Assessments* (PHAs). ATSDR (1998) concluded that “*radiological contaminants detected in Norton AFB drinking water wells and Riverside drinking water wells downgradient of Norton do not pose a health hazard.*”

In 2001, RPU reached agreement with the manufacturers of the pesticide dibromochloropropane (DBCP) that have contaminated wells in the Riverside groundwater basins. Under the agreement, DBCP manufacturers agree to pay the capital costs and 40 years of operating and maintenance (O&M) costs of facilities to remove DBCP from impacted production wells.

RPU has steadily increased the installed capacities of water treatment facilities to mitigate contamination. RPU has trained and certified water operators to appropriate levels commensurate with the level of planned and installed water treatment facilities and as required by the amendments to the SDWA in 1996.

6.4 Source Water Assessment (SWA)

In 1996, Congress amended the SDWA to include source water protection as part of the multiple-barrier approach to protecting the quality of drinking water delivered to consumers. The amendments required public water systems (PWS) to conduct Source Water Assessment (SWA) and develop an optional protection plan (DHS, 2000). Source water protection is the leading first barrier of the multiple-barrier approach to protecting the quality of drinking water. Other elements of the multi-barrier protection framework include source water treatment (including disinfection); distribution system integrity (including cross-connection control programs); and public information (CCR).

RPU (2000) completed the SWA for wells located in the Riverside North and Riverside South basins. RPU collaborated with other agencies through the USAWRA and the San Bernardino Valley Water Conservation District to conduct SWA for wells in Bunker Hill basin.

6.5 Source Water Protection Plan (SWPP)

In May 1965 there was a severe outbreak of gastroenteritis in the City during which about 18,000 residents were affected (Ross and Creason, 1966). Boring et al., (1971) reported that the illnesses resulted from exposure to salmonella typhimurium in purveyed water.

RPU (2000) SWA suggested that the groundwater in the North Orange and Highgrove areas i.e., Riverside North and Riverside South groundwater basins) area is vulnerable to contaminants associated with septic systems, such as nitrates, chemicals, and harmful pathogens. RPU (2002) completed the optional SWPP for wells located in that area. Appendix F.8 is the City ordinance prohibiting new septic systems in the protected area illustrated in Appendix F.9.

The new transmission main from the North Orange area, installed wellhead/regional treatment facilities, and installation of additional chlorination facilities upstream coupled with an effective groundwater protection plan significantly reduces the potential for similar incidence.

7 WATER SERVICE RELIABILITY

7.1 Projected Normal Water Year Supply and Demand

RPU extraction rights in Bunker Hill basin is based on the long-term safe yield of that basin. Extractions from other basins are based on “historic rates.” RPU projects sufficient normal supplies for all groundwater basins. Extractions from all the groundwater basins are regularly monitored by Court appointed Watermasters (Superior Court of the State of California for the County of Orange, 1969). MWD (2005) UWMP projects sufficient supplies to meet demands of member agencies including WMWD. WMWD is the wholesale supplier of imported water to RPU. Appendix G.1 is the projected multi-dry year supply capability for MWD through 2030.

7.1.1 Provision of This Section to City And County Within Water Service Area.

The UWMP Act requires providing this information to any city or county within your service area within 60 days of submission of the UWMP to DWR. RPU is an agency of the City of Riverside. RPU Water Service Area (WSA) is within Riverside County. A copy of the adopted UWMP shall be sent to Riverside County (Appendix A.3).

7.1.2 Comparison of Projected Normal Supply

As explained in Section 2, RPU has developed additional supplies since 1992 that was identified earlier as the historic “normal” year. 2005 is a better representative of prevailing “normal” year resource (groundwater, imported water, recycled water) mix than 1992.

Table 7.1-1 compares the projected normal water supply to projected normal water supply over the next 25 years, in 5-year increments. Projected normal water supply will reach about 116,000 acre-feet by 2030, or 56% more water than in 2005.

Table 7.1-1
Projected Normal Water Supply

DWR UWMP Review Table 40 Projected Normal Water Supply - AF Year					
	2010	2015	2020	2025	2030
Supply¹	94,421	98,171	108,921	112,671	116,421
% of year 2005	127%	132%	146%	151%	156%

¹Data from DWR UWMP Review Table 4

Projected normal water supply for 2005 is **74,533** acre-feet (1)

7.1.3 Comparison of Projected Normal Demand

Table 7.1-2 compares the projected normal water demand to projected 2005 normal demand. Annual water demand would increase by about 34% between 2005 and 2030, i.e., from about 78,000 acre-feet in 2005 to about 104,000 acre-feet in 2030.

Table 7.1-2
Projected Normal Water Demand

DWR UWMP Review Table 41					
Projected Normal Water Demand - AF Year					
	2010	2015	2020	2025	2030
Demand¹	85,231	91,048	95,858	99,835	104,374
% of year 2005	110%	117%	123%	128%	134%

¹From DWR UWMP Review Table 15

Projected normal water demand for 2005 is **77,767** acre-feet

7.1.4 Comparison of Projected Normal Demand and Supply

Table 7.1-3 compares the projected normal water demand to projected normal water supply and demand over the next 25 years, in 5-year increments. Available projected supply exceeds projected demand through 2030. The projected annual “surplus” would increase from about 9,000 acre-feet in 2010 to about 12,000 acre-feet by 2030.

Table 7.1-3
Projected Normal Water Demand

DWR UWMP Review Table 42					
Projected Supply and Demand Comparison - AF Year					
	2010	2015	2020	2025	2030
Supply Totals ¹	94,421	98,171	108,921	112,671	116,421
Demand Totals ²	85,231	91,048	95,858	99,835	104,374
Difference	9,190	7,123	13,063	12,836	12,047
Difference as % of Supply	10%	7%	12%	11%	10%
Difference as % of Demand	11%	8%	14%	13%	12%

¹Data from DWR UWMP Review Table 40. ²Data from DWR UWMP Review Table 41

7.2 Projected Single-Dry-Year Supply and Demand Comparison

7.2.1 Projected Single-Dry-Year Supply

Not all water sources would be equally affected by a single-dry year. Groundwater and recycled water would not be significantly affected. Net amount of imported water is assumed to be zero, i.e., amount of water sold to the Western Municipal Water District would equal the amount of water purchased from the District for operational reasons. Table 7.2-1 and Table 7.2-2 present the projected available water supplies by sources during a single-dry year.

Table 7.2-1
Normal and Single Dry Year Water Supplies

Normal and Single dry year Current and Planned Water Supplies - (acre-feet/year)						
Water Supply Sources	2005	2010	2015	2020	2025	2030
NORMAL YEAR (EXISTING + PLANNED - Data from DWR UWMP Table 4)						
Groundwater	72,033	87,421	87,421	94,421	94,421	94,421
Imported water	2,300	3,800	5,300	6,800	8,300	9,800
Recycled water	200	1,200	3,450	5,700	7,950	10,200
Desalination	-	-	-	-	-	-
Other - Seven Oaks Dam Conservation storage	0	2,000	2,000	2,000	2,000	2,000
Normal Year Total	74,533	94,421	98,171	108,921	112,671	116,421
SINGLE DRY YEAR (EXISTING + PLANNED)						
Groundwater	72,033	87,421	87,421	94,421	94,421	94,421
Imported water	-	-	-	-	-	-
Recycled water	200	1,200	3,450	5,700	7,950	10,200
Desalination	-	-	-	-	-	-
Other - Seven Oaks Dam Conservation storage	0	2,000	2,000	2,000	2,000	2,000
Single-dry year Total	72,233	90,621	92,871	102,121	104,371	106,621

Assumptions for single dry year: Net imported water = 0 (sales to Western MWD = purchases from Western MWD).

Table 7.2-2
Projected Single Dry Year Water Supplies

DWR UWMP Review Table 43 Projected single dry year Water Supply - AF Year					
Projected	2010	2015	2020	2025	2030
Single dry year supply ¹	90,621	92,871	102,121	104,371	106,621
Normal year supply ²	94,421	98,171	108,921	112,671	116,421
% of projected normal	96%	95%	94%	93%	92%

Data sources: ¹From Table 7.2-1. ²From DWR UWMP Review Table 42.

7.2.2 Projected Single-Dry-Year Demand

Table 7.2-3 summarizes projected demand assuming a 5% drop in demand due to voluntary conservation and/or rationing (Table 4.1-1).

Table 7.2-3
Projected Single Dry Year Water Demand

DWR UWMP Review Table 44 Projected single dry year Water Demand - AF Year					
Projected Demand	2010	2015	2020	2025	2030
Normal ¹	85,231	91,048	95,858	99,835	104,374
Single dry year	80,970	86,495	91,066	94,843	99,155
% of projected normal	95%	95%	95%	95%	95%

¹Data from DWR UWMP Review Table 15.

7.2.3 Projected Single-Dry-Year Demand and Supply

Table 7.2-4 summarizes projected demand and supply for a single-dry-year.

Table 7.2-4
Projected Single Dry Year Water Supply and Demand Comparison

DWR UWMP Review Table 45					
Projected single dry year Supply and Demand Comparison - AF Year					
Projected	2010	2015	2020	2025	2030
Supply (1)	90,621	92,871	102,121	104,371	106,621
Demand (2)	80,970	86,495	91,066	94,843	99,155
Difference (1) - (2)	9,651	6,376	11,055	9,528	7,466
Difference as % of Supply	11%	7%	11%	9%	7%
Difference as % of Demand	12%	7%	12%	10%	8%

Data sources: (1) and (2) from DWR UWMP Review Tables 43 and 44 respectively.

7.3 Projected Multiple-Dry-Year Supply and Demand Comparison

7.3.1 Multi-dry-period ending 2010

RPU relies mainly on groundwater sources that have proven very reliable even during multi-year droughts. The following assumption applies in determining available water supplies during multi-dry years: amount of imported water purchased or sold nets out (i.e., sales to Western MWD = purchases from Western MWD).

Table 7.3-1
Projected Supply Multi-Dry Period Ending 2010

DWR UWMP Review Table 46					
Projected supply during multiple dry year period ending in 2010 - AFY					
	2006	2007	2008	2009	2010
Normal year	78,111	81,688	85,266	88,843	94,421
Multi-dry year	77,811	81,088	84,366	87,643	92,921
% of projected normal	100%	99%	99%	99%	98%

Table 7.3-1 summarizes projected water supplies.

Table 7.3-2 summarizes projected water demand assuming implementation of demand management programs described in Section 4.

Table 7.3-2
Projected Demand Multi-Dry Period Ending 2010

DWR UWMP Review Table 47					
Projected demand multiple dry year period ending in 2010 - AFY					
	2006	2007	2008	2009	2010
Normal year demand	79,260	80,753	82,245	83,738	85,231
Multi-Dry-year Demand	75,297	76,715	74,021	75,365	68,185
% of projected normal	95%	95%	90%	90%	80%

Table 7.3-3 compares projected water supply with demand.

Table 7.3-3
Projected Supply and Demand Comparison During Multi-Dry Period Ending 2010

DWR UWMP Review Table 48					
Projected Supply and Demand Comparison during multiple dry year period ending in 2010- AFY					
	2006	2007	2008	2009	2010
Supply totals	77,811	81,088	84,366	87,643	92,921
Demand totals	75,297	76,715	74,021	75,365	68,185
Difference	2,514	4,373	10,345	12,279	24,736
Difference as % of Supply	3.2%	5.4%	12.3%	14.0%	26.6%
Difference as % of Demand	3.3%	5.7%	14.0%	16.3%	36.3%

7.3.2 Multi-Dry-Period Ending 2015

Same earlier assumptions apply in determining available water supplies. Table 7.3-4 summarizes projected water supplies.

Table 7.3-4
Projected Supply Multi-Dry Period Ending 2015

DWR UWMP Review Table 49					
Projected supply during multiple dry year period ending in 2015 - AFY					
	2011	2012	2013	2014	2015
Normal year	95,171	95,921	96,671	97,421	98,171
Multi-dry year	91,071	91,521	91,971	92,421	92,871
% of projected normal	96%	95%	95%	95%	95%

Table 7.3-5 summarizes projected water demand assuming implementation of demand management programs described in Section 4.

Table 7.3-5
Projected Demand Multi-Dry Period Ending 2015

DWR UWMP Review Table 50					
Projected demand multiple dry year period ending in 2015 - AFY					
	2011	2012	2013	2014	2015
Normal year demand	86,395	87,558	88,721	89,884	91,048
Multi-Dry-year Demand	82,075	83,180	79,849	80,896	72,838
% of projected normal	95%	95%	90%	90%	80%

Table 7.3-6 compares projected water supply with demand.

Table 7.3-6

Projected Supply And Demand Comparison During Multi-Dry Period Ending 2015

DWR UWMP Review Table 51					
Projected Supply and Demand Comparison during multiple dry year period ending in 2015- AFY					
	2011	2012	2013	2014	2015
Supply totals	91,071	91,521	91,971	92,421	92,871
Demand totals	82,075	83,180	79,849	80,896	72,838
Difference	8,996	8,341	12,122	11,525	20,033
Difference as % of Supply	9.9%	9.1%	13.2%	12.5%	21.6%
Difference as % of Demand	11.0%	10.0%	15.2%	14.2%	27.5%

7.3.3 Multi-Dry-Period Ending 2020

Same earlier assumptions apply in determining available water supplies. Table 7.3-7 summarizes projected water supplies.

Table 7.3-7

Projected Supply Multi-Dry Period Ending 2020

DWR UWMP Review Table 52					
Projected supply during multiple dry year period ending in 2015 - AFY					
	2016	2017	2018	2019	2020
Normal year	100,321	102,471	104,621	106,771	108,921
Multi-dry year	94,721	96,571	98,421	100,271	102,121
% of projected normal	94%	94%	94%	94%	94%

Table 7.3-8 summarizes projected water demand assuming implementation of demand management programs described in Section 4.

Table 7.3-8

Projected Demand Multi-Dry Period Ending 2020

DWR UWMP Review Table 53					
Projected demand multiple dry year period ending in 2020 - AFY					
	2016	2017	2018	2019	2020
Normal year demand	92,010	92,972	93,934	94,896	95,858
Multi-Dry-year Demand	87,409	88,323	84,541	85,407	76,687
% of projected normal	95%	95%	90%	90%	80%

Table 7.3-9 compares projected water supply with demand.

Table 7.3-9
Projected Supply And Demand Comparison During Multi-Dry Period Ending 2020

DWR UWMP Review Table 54					
Projected Supply and Demand Comparison during multiple dry year period ending in 2020 - AFY					
	2016	2017	2018	2019	2020
Supply totals	94,721	96,571	98,421	100,271	102,121
Demand totals	87,409	88,323	84,541	85,407	76,687
Difference	7,312	8,248	13,880	14,864	25,434
Difference as % of Supply	7.7%	8.5%	14.1%	14.8%	24.9%
Difference as % of Demand	8.4%	9.3%	16.4%	17.4%	33.2%

7.3.4 Multi-Dry-Period Ending 2025

Same earlier assumptions apply in determining available water supplies. Table 7.3-10 summarizes projected water supplies.

Table 7.3-10
Projected Supply Multi-Dry Period Ending 2025

DWR UWMP Review Table 55					
Projected supply during multiple dry year period ending in 2025 - AFY					
	2021	2022	2023	2024	2025
Normal year	109,671	110,421	111,171	111,921	112,671
Multi-dry year	102,571	103,021	103,471	103,921	104,371
% of projected normal	94%	93%	93%	93%	93%

Table 7.3-11 summarizes projected water demand assuming implementation of demand management programs described in Section 4.

Table 7.3-11
Projected Demand Multi-Dry Period Ending 2025

DWR UWMP Review Table 56					
Projected demand multiple dry year period ending in 2025 - AFY					
	2021	2022	2023	2024	2025
Normal year demand	96,654	97,449	98,244	99,039	99,835
Multi-Dry-year Demand	91,821	92,576	88,420	89,135	79,868
% of projected normal	95%	95%	90%	90%	80%

Table 7.3-12 compares projected water supply with demand.

Table 7.3-12
Projected Supply And Demand Comparison During Multi-Dry Period Ending 2025

DWR UWMP Review Table 57					
Projected Supply and Demand Comparison during multiple dry year period ending in 2025 - AFY					
	2021	2022	2023	2024	2025
Supply totals	102,571	103,021	103,471	103,921	104,371
Demand totals	91,821	92,576	88,420	89,135	79,868
Difference	10,750	10,445	15,051	14,786	24,503
Difference as % of Supply	10.5%	10.1%	14.5%	14.2%	23.5%
Difference as % of Demand	11.7%	11.3%	17.0%	16.6%	30.7%

7.3.5 Multi-Dry-Period Ending 2030

Same earlier assumptions apply in determining available water supplies. Table 7.3-13 summarizes projected water supplies.

Table 7.3-13
Projected Supply Multi-Dry Period Ending 2030

[DWR UWMP Review Table 58]					
Projected supply during multiple dry year period ending in 2030 - AFY					
	2026	2027	2028	2029	2030
Normal year	113,421	114,171	114,921	115,671	116,421
Multi-dry year	104,821	105,271	105,721	106,171	106,621
% of projected normal	92%	92%	92%	92%	92%

Table 7.3-14 summarizes projected water demand assuming implementation of demand management programs described in Section 4.

Table 7.3-14
Projected Demand Multi-Dry Period Ending 2030

[DWR UWMP Review Table 59]					
Projected demand multiple dry year period ending in 2030 - AFY					
	2026	2027	2028	2029	2030
Normal year demand	100,742	101,650	102,558	103,466	104,374
Multi-Dry-year Demand	95,705	96,568	92,302	93,119	83,499
% of projected normal	95%	95%	90%	90%	80%

Table 7.3-15 compares projected water supply with demand.

Table 7.3-15
Projected Supply And Demand Comparison During Multi-Dry Period Ending 2030

[DWR UWMP Review Table 60] Projected Supply and Demand Comparison during multiple dry year period ending in 2030 - AFY					
	2026	2027	2028	2029	2030
Supply totals	104,821	105,271	105,721	106,171	106,621
Demand totals	95,705	96,568	92,302	93,119	83,499
Difference	9,116	8,703	13,419	13,052	23,122
Difference as % of Supply	8.7%	8.3%	12.7%	12.3%	21.7%
Difference as % of Demand	9.5%	9.0%	14.5%	14.0%	27.7%

8 ADOPTION AND IMPLEMENTATION OF UWMP

8.1 Adoption

See Section 1.3. A copy of the adoption resolution is attached to this UWMP (Appendix A.4).

8.2 Public Participation¹

A special effort was made to include community and public interest groups. Legal public notices for each meeting were published in the local newspapers, posted at City offices and library and on City web site. RPU solicited inputs, data, comments and information from many stakeholders in preparing this UWMP. RPU regularly holds Board meeting in which the public is invited to participate. In addition, RPU and COR maintain a public website with links to reports and conservation related resources. Copies of the draft UWMP were available at RPU Office and on the website. Final copy of the adopted UWMP would be posted online at: <http://www.riversidepublicutilities.com>.

8.3 Review of 2000 UWMP DMM Implementation Plan

RPU reviewed the BMP implementation plan and determined that all of the applicable BMP's listed in that UWMP are being implemented (See Section 3). RPU is not a wholesale agency and does not implement BMP 10 "Wholesale Agency Assistance Programs." RPU is a member agency of Western Municipal Water District (WMWD), which in turn is a member agency of Metropolitan Water District (MWD) of Southern California. MWD implements BMP 10. RPU implements some DMM measures in cooperation with Western MWD and MWD. Appendix H.1 is a summary of the Water Conservation Incentive Program in WMWD general service area. RPU also promotes water conservation locally.

8.4 Review of 2000 UWMP Recycled Water Implementation Plan

See Section 5.3.4

¹ Government Code section 6066. *Publication of notice pursuant to this section shall be once a week for two successive weeks. Two publications in a newspaper published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates, are sufficient. The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day.*

8.5 Filing and distribution of UWMP

Appendix A.3 (see Section 1) lists the agencies that will be mailed copies of the adopted UWMP. RPU will provide copies of its 2005 UWMP to DWR within 30 days of adoption. RPU will make the 2005 UWMP available for public review within 30 days of filing it with DWR.

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APPENDICES

APPENDIX A.1

Urban Water Management Plan Act

Appendix A.1

Urban Water Management Plan Act

Established: AB 797, Klehs, 1983

Amended: AB 2661, Klehs, 1990

AB 11X, Filante, 1991

AB 1869, Speier, 1991

AB 892, Frazee, 1993

SB 1017, McCorquodale, 1994

AB 2853, Cortese, 1994

AB 1845, Cortese, 1995

SB 1011, Polanco, 1995

AB 2552, Bates, 2000

SB 553, Kelley, 2000

SB 610, Costa, 2001

AB 901, Daucher, 2001

SB 672, Machado, 2001

SB 1348, Brulte, 2002

SB 1384 Costa, 2002

SB 1518 Torlakson, 2002

AB 105, Wiggins, 2003

SB 318, Alpert, 2004

CALIFORNIA WATER CODE

DIVISION 6

PART 2.6.

URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

- (1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.
- (2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.
- (3) A long-term, reliable supply of water is essential to protect the productivity of California's

businesses and economic climate.

- (4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.
- (5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
- (6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.
- (7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.
- (8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
- (9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.
- (b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

- (a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
- (b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
- (c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The

plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS

Article 1. General Provisions

10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.

(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water

supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

- (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.
- (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:
 - (1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.
 - (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.
 - (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
 - (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
- (c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

- (1) An average water year.
- (2) A single dry water year.
- (3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e)(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

- (A) Single-family residential.
- (B) Multifamily.
- (C) Commercial.
- (D) Industrial.
- (E) Institutional and governmental.
- (F) Landscape.
- (G) Sales to other agencies.
- (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
- (I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

- (1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
 - (A) Water survey programs for single-family residential and multifamily residential customers.
 - (B) Residential plumbing retrofit.
 - (C) System water audits, leak detection, and repair.
 - (D) Metering with commodity rates for all new connections and retrofit of existing connections.
 - (E) Large landscape conservation programs and incentives.
 - (F) High-efficiency washing machine rebate programs.
 - (G) Public information programs.
 - (H) School education programs.
 - (I) Conservation programs for commercial, industrial, and institutional accounts.
 - (J) Wholesale agency programs.
 - (K) Conservation pricing.
 - (L) Water conservation coordinator.
 - (M) Water waste prohibition.
 - (N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of

subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

- (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.
- (2) Include a cost-benefit analysis, identifying total benefits and total costs.
- (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.
- (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water -year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

10632. The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

- (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.
- (b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.
- (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.
- (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
- (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.
- (f) Penalties or charges for excessive use, where applicable.
- (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
- (h) A draft water shortage contingency resolution or ordinance.
- (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

- (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
- (b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
- (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
- (d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.
- (e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.
- (f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water

management strategies and supply reliability.

Article 2.5 Water Service Reliability

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be

submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the outstanding elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(c) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

10657. (a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.

(b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.

APPENDIX A.2

Notices of Public Hearing

THE PRESS-ENTERPRISE

Corona-Norco Independent, Elsinore Sun-Tribune,
Rancho News, Sun City News, Menifee Valley News

3512 Fourteenth Street
Riverside CA 92501-3878
951-684-1200
951-368-9018 FAX

PROOF OF PUBLICATION (2010, 2015.5 C.C.P.)

PROOF OF PUBLICATION OF

LE-City

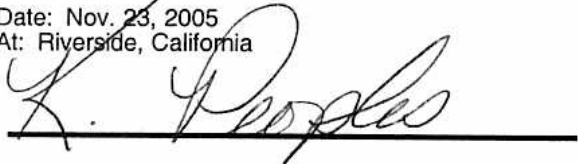
Ad Desc.: Public Utilities 2005 Urban Water

I am a citizen of the United States. I am over the age of eighteen years and not a party to or interested in the above entitled matter. I am an authorized representative of THE PRESS-ENTERPRISE, a newspaper of general circulation, printed and published daily in the city of Riverside, County of Riverside, and which newspaper has been adjudicated a newspaper of general circulation by the Superior Court of the County of Riverside, State of California, under date of April 25, 1952, Case Number 54446, under date of March 29, 1957, Case Number 65673 and under date of August 25, 1995, Case Number 267864; that the notice, of which the annexed is a printed copy, has been published in said newspaper in accordance with the instructions of the person(s) requesting publication, and not in any supplement thereof on the following dates, to wit:

11-17-05
11-23-05

I Certify (or declare) under penalty of perjury that the foregoing is true and correct.

Date: Nov. 23, 2005
At: Riverside, California



RIVERSIDE PUBLIC UTILITIES
3900 MAIN ST, 4TH FLOOR
ROBERT SUTTON
RIVERSIDE CA 92522

Ad #: 7258616

PO #:

Agency #: _____

Ad Copy:

City of Riverside Notice of Public Hearing 2005 Urban Water Management Plan

NOTICE IS HEREBY GIVEN that a public hearing will be held before the City of Riverside Board of Public Utilities on Friday, December 2, 2005, at 8:15 a.m. in the Art Pick Council Chambers, City Hall, 3900 Main Street, Riverside, California to receive comments on Riverside Public Utilities' 2005 Urban Water Management Plan. The California Urban Water Management Planning Act requires that each urban water supplier providing water for municipal purposes shall prepare and adopt its urban water management plan at least once every five years. The draft of the Urban Water Management Plan is available for review on the Riverside Public Utilities' Web site at www.riversidepublicutilities.com or by contacting Zahra Panahi, Riverside Public Utilities Water Division, 3900 Main Street, Riverside, California 92522. Persons unable to attend the hearing may submit their written statements on the matter to Public Utilities Director, City Hall, 3900 Main Street, Riverside, California 92522, prior to the date and time set for the hearing.

Dated: November 1, 2005
Signed: David H. Wright
Public Utilities Director
11/17/23

Ad Number: B18/B18778550 Operator: lbetanco
Customer: CITY OF RIV. PUBLIC UTILITIES
Purge: 12-07-05 Sales Person: MARISHA
Size: A 2.00 X 6.00 Run Date: 11/18/05

Ciudad de Riverside
Noticia de Audiencia Pública
Plan de Manejo del Agua Urbana año 2005
(2005 Urban Water Management Plan)

SE DA LA NOTICIA que una audiencia pública será llevada a cabo ante el Panel de Utilidades Públicas de la Ciudad de Riverside el viernes 2 de diciembre de 2005 a las 8:15 a.m. en el Art Pick Council Chambers, City Hall, 3900 Main Street, Riverside, California para recibir comentarios sobre el Plan de Manejo del Agua Urbana año 2005. El Acta del Plan de Manejo del Agua Urbana de California (The California Urban Water Management Planning Act) requiere que cada suministrador de agua urbana que esté proveyendo agua para propósitos municipales se prepare y adopte el plan de manejo de agua urbana al menos una vez cada cinco años. El proyecto del Plan de Manejo del Agua Urbana está disponible para su análisis en la página de Internet de Riverside Public Utilities, www.riversidepublicutilities.com o comunicándose con Zahra Panahi, Riverside Public Utilities Water Division, 3900 Main Street, Riverside, California 92522. Personas que no puedan asistir a la audiencia pueden someter comentarios escritos acerca del asunto al Public Utilities Director, City Hall, 3900 Main Street, Riverside, California 92522, antes de la fecha y hora de la audiencia pública.

Fecha: Noviembre 1 de 2005

Firma: *David H. Wright*

Director de Utilidades Públicas

AD APPROVAL

Please Check Appropriate Box

Ad OK Ad Ok w/corrections

Date _____ Signature _____

Fax to 951-368-9009

APPENDIX A.3

DISTRIBUTION LIST

Appendix A.3

DISTRIBUTION LIST

Water Code Section 10644 (a)

(a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

California State Library

County of Riverside Planning Department – Attention: G.V. Jolliffe

City of Riverside Library

City of Riverside Community Development Department - Planning

City of Riverside Public Works Department – Attention: Rodney Cruze

Santa Ana Watershed Project Authority (SAWPA)

California Department of Water Resources (DWR)

Western Municipal Water District of Riverside County

APPENDIX A.4

City Council Resolution Adopting the 2005 UWMP

RESOLUTION NO. 21093

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF RIVERSIDE TO
ADOPT THE URBAN WATER MANAGEMENT PLAN PREPARED BY THE CITY
OF RIVERSIDE'S PUBLIC UTILITIES DEPARTMENT

WHEREAS, the California Urban Water Management Planning Act (Water Code sections 10610 et seq.) mandates that every supplier providing water for municipal purposes to more than 3000 customers or supplying more than 3000 acre feet of water annually, prepare an Urban Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the City is an urban supplier of water providing water to more than 3000 customers and supplying more than 3000 acre feet of water annually;

WHEREAS, under state law, the City is required to periodically review the plan at least once every five years, and make any amendments or changes to its plan which are indicated by the review; and

WHEREAS, the plan must be adopted after public review and hearing, and filed with the California Department of Water Resources within thirty days of adoption; and

WHEREAS, the City has therefore prepared and circulated for public review a draft Urban Water Management Plan, and a properly noticed public hearing regarding said plan was held by the Board of Public Utilities on December 2, 2005; and


WHEREAS, the City of Riverside has prepared and shall file said plan with the California Department of Water Resources.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Riverside as follows:


A. The 2005 Urban Water Management Plan attached hereto as Exhibit A is hereby adopted and ordered filed with the City Clerk; and

B. The 2005 Urban Water Management Plan shall be filed with the California Department of Water Resources within thirty days of this adoption.

ADOPTED by the City Council and signed by the Mayor and attested by the City Clerk this 20th day of December, 2005.


Mayor of the City of Riverside

Attest:


City Clerk of the City of Riverside


I, Colleen J. Nicol, City Clerk of the City of Riverside, California, hereby certify that the foregoing resolution was duly and regularly introduced and adopted at a meeting of the City Council of said City at its meeting held on the 20th day of December, 2005, by the following vote, to wit:

Ayes: Councilmembers Betro, Moore, Gage, Schiavone, Adkison, Hart, and Adams

Noes: None

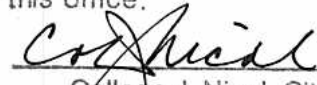
Absent: None

IN WITNESS WHEREOF I have hereunto set my hand and affixed the official seal of the City of Riverside, California, this 20th day of December, 2005.


City Clerk of the City of Riverside

G:\CLK\COUNCIL\Resolutions\Dec_20\21093.wpd

The foregoing instrument is certified, under penalty of perjury, to be a correct copy of the original on file in this office.

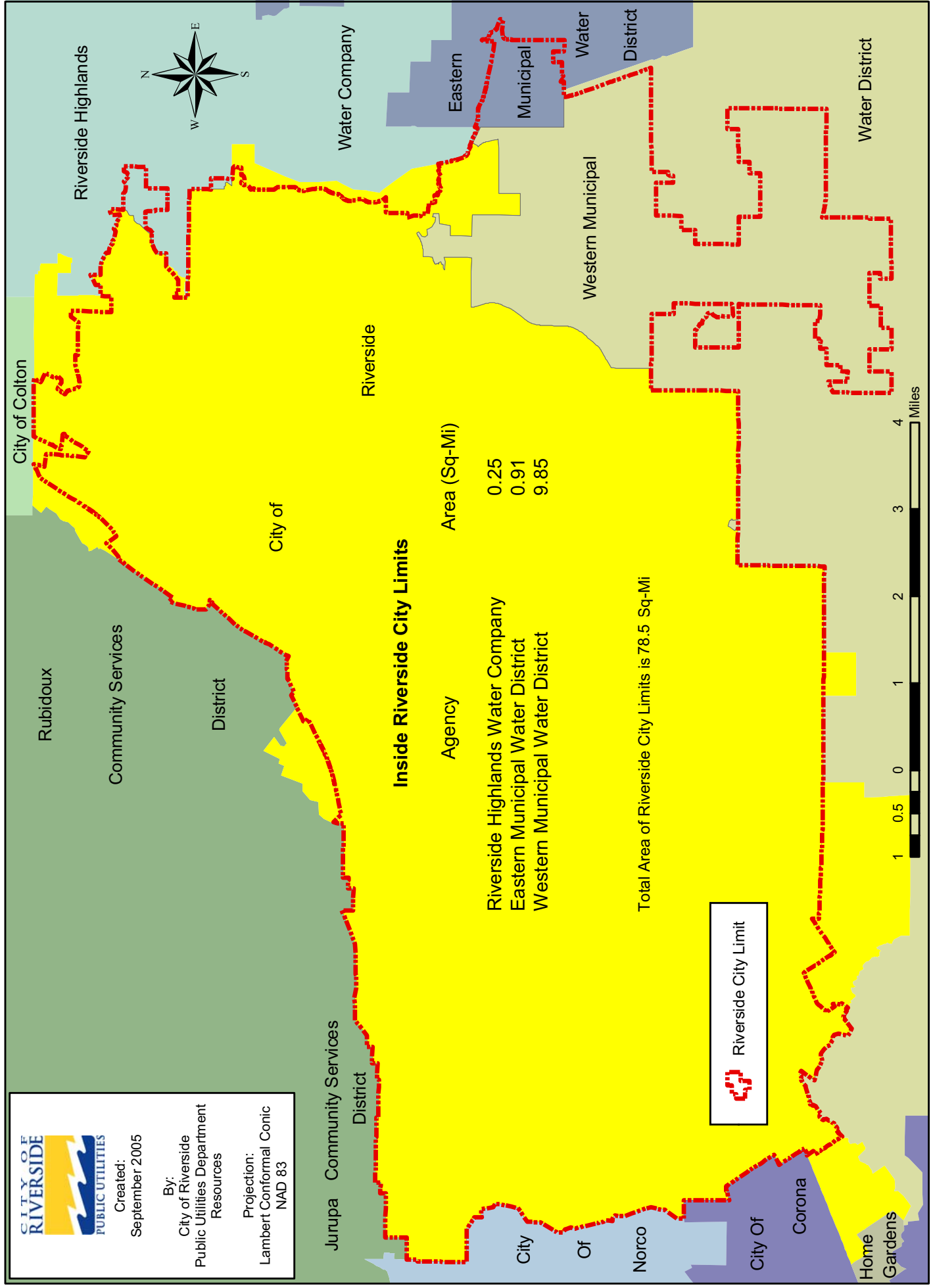

Colleen J. Nicol, City Clerk
City of Riverside, California

Executed on DEC. 27, 2005, at
Riverside, California

APPENDIX B.1

Water Service Areas Of Purveyors Within And Adjacent To City Of Riverside

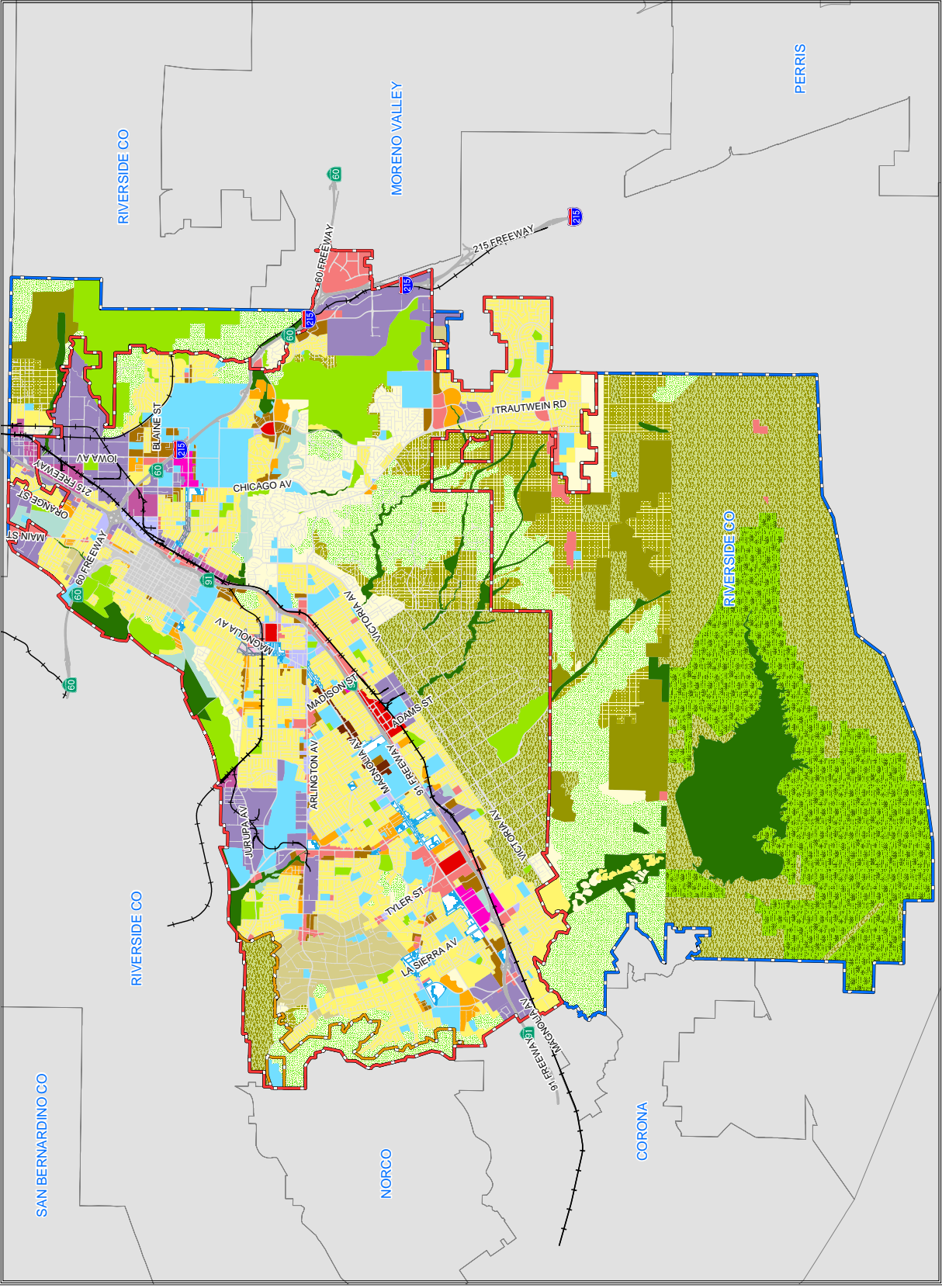
Appendix B.1



APPENDIX B.2

Land Use Policy Map General Plan 2025

Source:



Legend	
	City Limits
	Sphere Limits
	Riverside La Sierra Specific Plan
	General Plan 2025
Draft Land Use Element	
	RUR - RURAL RESIDENTIAL Max 0.20 FAR/acre; Avg 0.20 FAR/acre
	HR - HILLSIDE RESIDENTIAL Max 0.20 FAR/acre; Avg 0.20 FAR/acre
	SR - SUBURBAN RESIDENTIAL Max 0.25 FAR/acre; Avg 0.25 FAR/acre
	VDL - VERY LOW DENSITY RESIDENTIAL Max 0.25 FAR/acre; Avg 0.25 FAR/acre
	LDL - LOW DENSITY RESIDENTIAL Max 0.40 FAR/acre; Avg 0.40 FAR/acre
	MDR - MEDIUM DENSITY RESIDENTIAL Max 0.60 FAR/acre; Avg 0.60 FAR/acre
	MHDR - MEDIUM HIGH DENSITY RESIDENTIAL Max 0.80 FAR/acre; Avg 0.80 FAR/acre
	HDR - HIGH DENSITY RESIDENTIAL Max 1.0 FAR/acre; Avg 1.0 FAR/acre
	C - COMMERCIAL Max 0.50 FAR/acre; Avg 0.50 FAR/acre
	RC - COMMERCIAL REGIONAL CENTER Max 0.50 FAR/acre; Avg 0.50 FAR/acre
	DSP - DOWNTOWN SPECIFIC PLAN Max 0.50 FAR/acre; Avg 0.50 FAR/acre
	O - OFFICE Max 1.0 FAR/acre; Avg 1.0 FAR/acre
	BOP - BUSINESS/OFFICE PARK Max 1.0 FAR/acre; Avg 1.0 FAR/acre
	I - INDUSTRIAL Max 0.50 FAR/acre; Avg 0.50 FAR/acre
	MUN - MIXED USE NEIGHBORHOOD Max 1.0 FAR/acre; Avg 1.0 FAR/acre
	MUC - MIXED USE CENTER Max 1.0 FAR/acre; Avg 1.0 FAR/acre
	MU-U - MIXED USE URBAN Max 1.0 FAR/acre; Avg 1.0 FAR/acre
	PF - PUBLIC FACILITIES INSTITUTIONAL Max 1.0 FAR/acre; Avg 1.0 FAR/acre
	PR - PRIVATE RECREATION
	P - PUBLIC PARK
	OS - OPEN SPACE/NATURAL RESOURCES
	RAT - KANGAROO RAT HABITAT

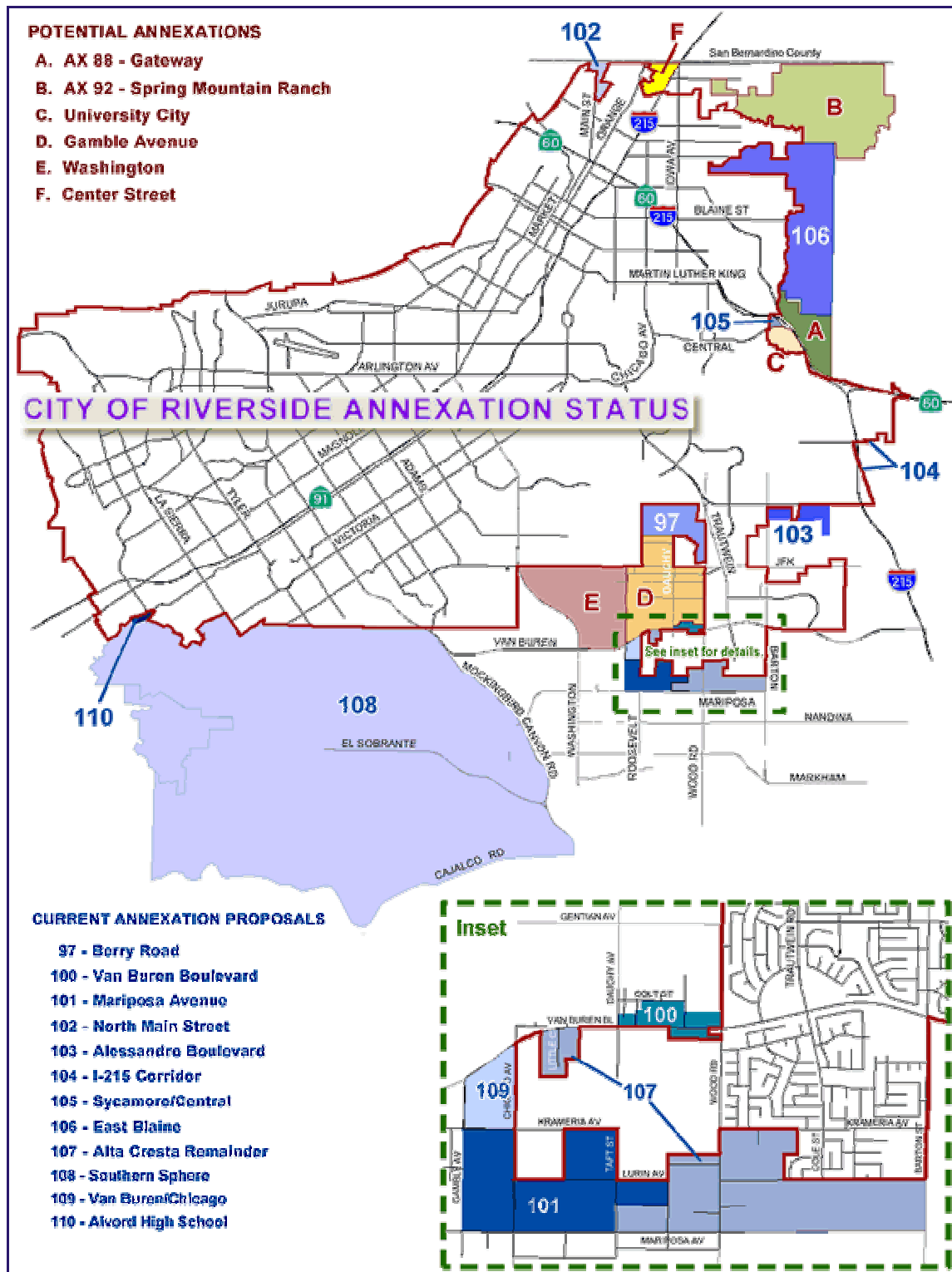
* See Table LU - 3 (Land Use Designations)

Appendix B.2 LAND USE POLICY MAP

APPENDIX B.3

Requested annexations to the City of Riverside, and their status

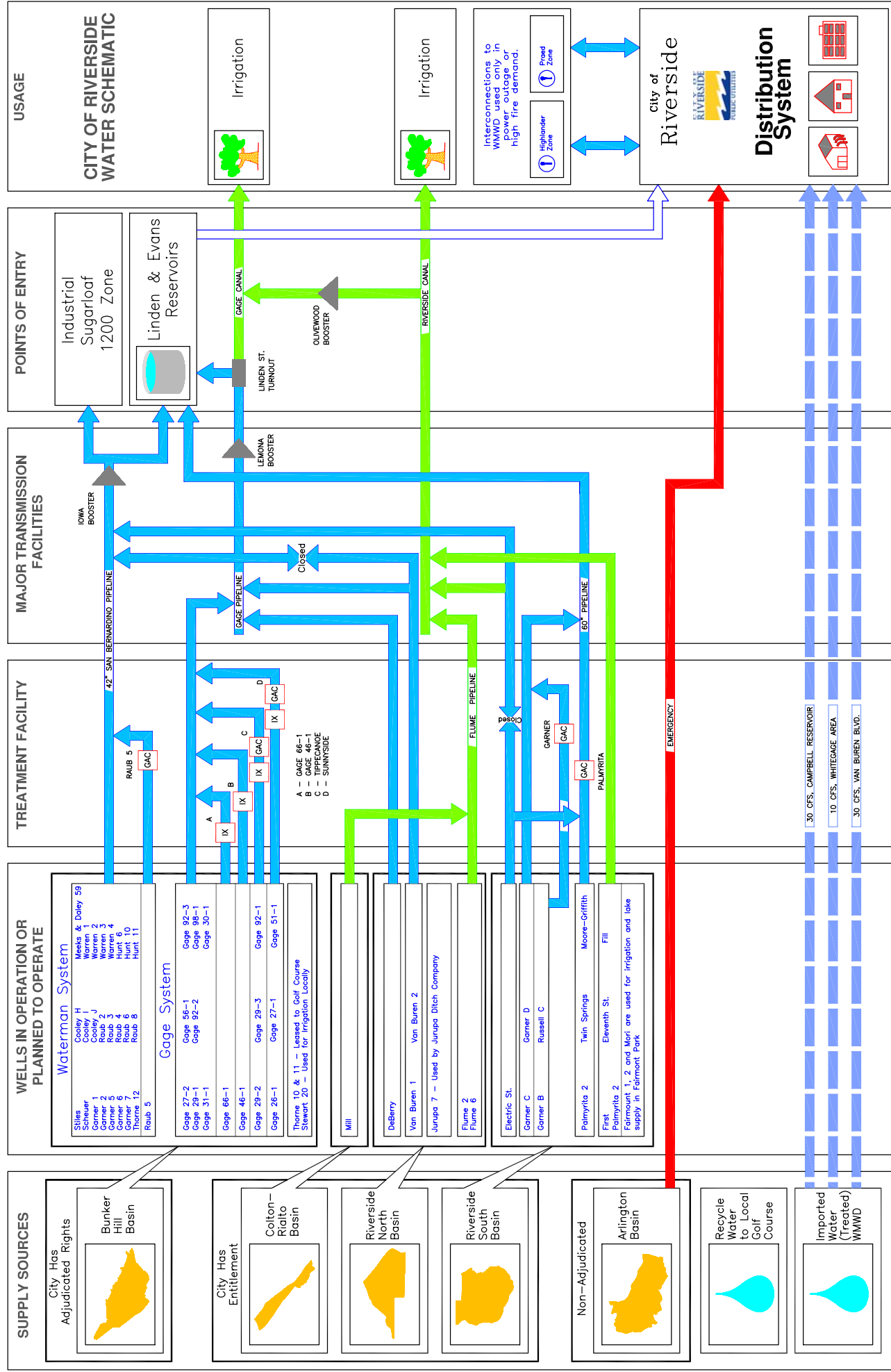
Appendix B.3



Source: <http://www.riversideca.gov/planning/annex.htm> (accessed September, 2005)

APPENDIX B.4

Schematic of RPU Water System

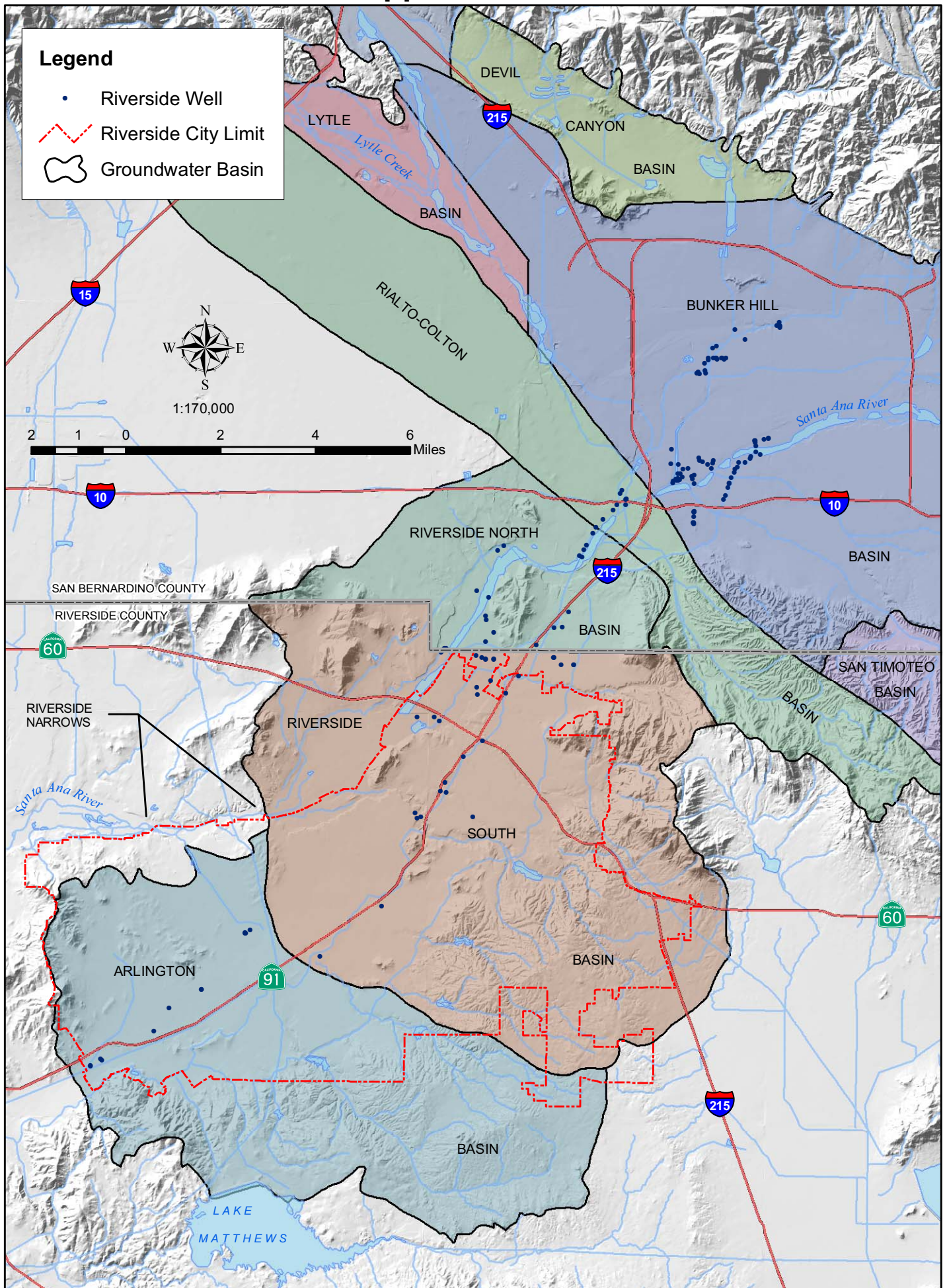


Appendix B.4

APPENDIX B.5

Groundwater Basin Map

Appendix B.5



APPENDIX B.6

Superior Court of the State of California for Riverside County (1969 Judgment)

Appendix B.6

Superior Court of the State of California For the County of Orange

ORANGE COUNTY WATER DISTRICT	}
vs.	
CITY OF CHINO, et al.,	
	<i>Plaintiff</i>
	<i>Defendants</i>

NO. 117628

SETTLEMENT DOCUMENTS

STIPULATIONS
RE DISMISSAL OF CERTAIN DEFENDANTS
RE DISMISSAL OF CERTAIN CROSS-DEFENDANTS
FOR JUDGMENT
JUDGMENT
MAP OF SANTA ANA RIVER WATERSHED
ENGINEERING APPENDIX
ORDER APPOINTING WATERMASTER

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT DOCUMENTS

AGREEMENTS

CITY OF SAN BERNARDINO
CITY OF COLTON

1969

WESTERN MUNICIPAL DOCUMENTS

AGREEMENTS

CHINO BASIN MWD
RIVERSIDE FLOOD CONTROL
CITY OF RIVERSIDE
CITY OF CORONA
WMWD & ESBCWD SETTLEMENT
STIPULATION FOR JUDGMENT
JUDGMENT
ORDER APPOINTING WATERMASTER
ESBCWD STIPULATION AS TO
ACCEPTANCE OF JUDGMENT
ORDER AMENDING THE JUDGMENT
TO CLARIFY THE REPOSEMENT
OBLIGATIONS OF THE PARTIES

WMWD AND ESBCWD SETTLEMENT

STIPULATION FOR JUDGMENT

APR 17 1969

DONALD O. SULLIVAN, Clerk
By W. M. M. M. Deputy

CLAYSON, STARK, ROTHROCK & MANN
ATTORNEYS AT LAW
LAW BUILDING
601 SOUTH MAIN STREET
P. O. BOX 670
CORONA, CALIFORNIA 91720
737-1910
689-7241

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF RIVERSIDE

WESTERN MUNICIPAL WATER)
DISTRICT OF RIVERSIDE)
COUNTY, et al.,)

Plaintiff,)

v.)

EAST SAN BERNARDINO COUNTY)
WATER DISTRICT, et al.,)

Defendants.)

78426
No. 784726

APR 17/69

STIPULATION FOR JUDGMENT

The undersigned, as counsel for the indicated parties in
the above-entitled action, hereby stipulate and agree as
follows:

(1) That judgment, substantially in the form
attached hereto as Exhibit "A", may be entered by
the Court herein.

(2) That the limitation periods specified in
Sections 581 and 583 of the Code of Civil Procedure
are by this stipulation extended to and including
the date hereof.

(3) Each party to this stipulation expressly

1 waives findings of fact and conclusions of law in
2 support of the Judgment, and specifically waives any
3 right to appeal therefrom; provided that nothing
4 herein contained shall be deemed to restrict or im-
5 pair the rights of any parties in relation to any
6 proceeding which may hereafter be undertaken in connec-
7 tion with the exercise of the Court's reserved juris-
8 diction or determinations of the Watermaster.

9 Dated: April 17, 1969.

11 SAN BERNARDINO VALLEY
12 MUNICIPAL WATER DISTRICT

13 By Joseph E. Benadum
14 President

BEST, BEST & KRIEGER

By Arthur d. Littleworth
for Western Municipal Water
District of Riverside County

15 and Le Roy Williams
16 Secretary

JOHN WOODHEAD, City Attorney
LELAND J. THOMPSON JR.

17 Approved Martin McDonough
18 Attorney

By Leland J. Thompson
for City of Riverside,
for itself and as successor
in interest to Gage Canal
Company

22 CLAYSON, STARK, ROTHROCK & MANN

23 By Donald D. Stark
24 for Agua Mansa Water Company
25 and Meeks & Daley Water
26 Company

27 REDWINE & SHERRILL

28 By Francis C. Sherrill
29 for Riverside Highland Water
30 Company

31 THOMAS J. CUNNINGHAM
32 JOHN P. SPARROW
ROBERT C. FIELD

By John P. Sparrow
for The Regents of the University
of California 09/16/2005

JUDGMENT

FILED
RIV. RIDE COUNTY

APR 17 1969

DONALD H. KELLY, Clerk
By *[Signature]* Deputy

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF RIVERSIDE

WESTERN MUNICIPAL WATER DISTRICT OF
RIVERSIDE COUNTY, a municipal water
district; CITY OF RIVERSIDE, a
municipal corporation; THE GAGE
CANAL COMPANY, a corporation; AGUA
MANSA WATER COMPANY, a corporation,
MEEKS & DALEY WATER COMPANY, a
corporation; RIVERSIDE HIGHLAND
WATER COMPANY, a corporation, and
THE REGENTS OF THE UNIVERSITY OF
CALIFORNIA,

Plaintiffs,

-vs-

(A) EAST SAN BERNARDINO COUNTY
WATER DISTRICT, et al.,

Defendants

78426
No. 784726

[Signature]
4/17/69

JUDGMENT

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Boundaries of San Bernardino
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District & Western Municipal
Water District of Riverside
County

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Extractions by Plaintiffs from San
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1 therefor,

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3 IT IS HEREBY ORDERED, ADJUDGED AND DECREED as follows:

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5 I

6 ACTIVE PARTIES

7
8 (a) The parties to this Judgment are as follows:

9 (1) Plaintiff Western Municipal Water District
10 of Riverside County, a California municipal water district,
11 herein often called "Western", appearing and acting pursuant to
12 Section 71751 of the Water Code;

13 (2) Plaintiff City of Riverside, a municipal
14 corporation;

15 (3) Plaintiffs Riverside Highland Water
16 Company, Agua Mansa Water Company and Meeks & Daley Water
17 Company, each of which is a mutual water company and a
18 California corporation;

19 (4) Plaintiff The Regents of the University
20 of California, a California public corporation;

21 (5) Defendant San Bernardino Valley
22 Municipal Water District, a California municipal water district,
23 herein often called "San Bernardino Valley", appearing and
24 acting pursuant to Section 71751 of the Water Code;

25 (b) This Judgment shall inure to the benefit of, and
26 be binding upon, the successors and assigns of the parties.

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28 II

29 DISMISSED PARTIES

30 All parties other than those named in the preceding
31 Paragraph I are dismissed without prejudice.

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III
PRIOR JUDGMENTS

(a) The Judgment dated and entered on May 13, 1959, in that certain action filed in the Superior Court of the State of California in and for the County of San Bernardino, entitled and numbered "San Bernardino Valley Water Conservation District, a State Agency, Plaintiff v. Riverside Water Company, a corporation, et al., Defendants", No. 97031, is superseded effective January 1, 1971, and for so long as this Judgment remains in effect as to any party hereto that was a party to that action, and as to any party hereto that is a successor in interest to the rights determined in that action.

(b) The Judgment dated June 23, 1965, and entered on April 21, 1966, in that certain action filed in the Superior Court of the State of California in and for the County of San Bernardino entitled and numbered "San Bernardino Valley Water Conservation District, a State Agency, Plaintiff, v. Riverside Water Company, a corporation, et al., Defendants," No. 111614, is superseded effective January 1, 1971, and for so long as this Judgment remains in effect as to any party hereto that was a party to that action, and as to any party hereto that is a successor in interest to any rights determined in that action.

(c) As used in this Paragraph III only, "party" includes any person or entity which stipulates with the parties hereto to accept this Judgment.

IV

DEFINITIONS

The following ground water basins and tributary areas are situated within the Santa Ana River watershed upstream from Riverside Narrows and are tributary thereto, and their approximate locations and boundaries for purposes of this Judgment are shown upon the map attached hereto as Appendix "A"; San Bernardino Basin Area (the area above Bunker Hill Dike, but excluding certain mountainous regions and the Yucaipa, San Timoteo, Oak Glen and Beaumont Basins); Colton Basin Area, Riverside Basin Area within San Bernardino County, and Riverside Basin Area within Riverside County.

As used herein the following terms shall have the meanings herein set forth:

(a) Bunker Hill Dike - The San Jacinto Fault, located approximately as shown on Appendix "A", and forming the principal downstream boundary of the San Bernardino Basin Area.

(b) Riverside Narrows - That bedrock narrows in the Santa Ana River indicated on Appendix "A".

(c) Extractions - Any form of the verb or noun shall include pumping, diverting, taking or withdrawing water, either surface or subsurface, by any means whatsoever, except extractions for hydroelectric generation to the extent that such flows are returned to the stream, and except for diversions for replenishment.

(d) Natural Precipitation - Precipitation which falls naturally in the Santa Ana River watershed.

(e) Imported Water - Water brought into the Santa Ana River watershed from sources of origin outside such watershed.

1 (f) Replenishment - Artificial recharge of the
2 ground water body achieved through the spreading or retention of
3 water for the purpose of causing it to percolate and join the
4 underlying ground water body, or injection of water into the
5 ground water resources by means of wells; provided that as used
6 with reference to any obligation of Western to replenish the
7 Riverside Basin Area in Riverside County, the term replenishment
8 shall include any water caused to be delivered by Western for
9 which credit is received by San Bernardino Valley against its
10 obligation under the Orange County Judgment to provide base
11 flow at Riverside Narrows.

12 (g) Safe Yield - Safe yield is that maximum
13 average annual amount of water that could be extracted from the
14 surface and subsurface water resources of an area over a period
15 of time sufficiently long to represent or approximate long-time
16 mean climatological conditions, with a given areal pattern of
17 extractions, under a particular set of physical conditions or
18 structures as such affect the net recharge to the ground water
19 body, and with a given amount of usable underground storage
20 capacity, without resulting in long-term, progressive lowering
21 of ground water levels or other undesirable result. In
22 determining the operational criteria to avoid such adverse
23 results, consideration shall be given to maintenance of adequate
24 ground water quality, subsurface outflow, costs of pumping,
25 and other relevant factors.

26 The amount of safe yield is dependent in part upon
27 the amount of water which can be stored in and used from the
28 ground water reservoir over a period of normal water supply
29 under a given set of conditions. Safe yield is thus related to
30 factors which influence or control ground water recharge, and
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1 to the amount of storage space available to carry over recharge
2 occurring in years of above average supply to years of
3 deficient supply. Recharge, in turn, depends on the available
4 surface water supply and the factors influencing the
5 percolation of that supply to the water table.

6 Safe yield shall be determined in part through the
7 evaluation of the average net groundwater recharge which would
8 occur if the culture of the safe yield year had existed over
9 a period of normal native supply.

10 (h) Natural Safe Yield - That portion of the safe
11 yield of the San Bernardino Basin Area which could be derived
12 solely from natural precipitation in the absence of imported
13 water and the return flows therefrom, and without
14 contributions from new conservation. If in the future any
15 natural runoff tributary to the San Bernardino Basin Area is
16 diverted away from that Basin Area so that it is not included
17 in the calculation of natural safe yield, any replacement made
18 thereof by San Bernardino Valley or entities within it from
19 imported water shall be included in such calculation.

20 (i) New Conservation - Any increase in
21 replenishment from natural precipitation which results from
22 operation of works and facilities not now in existence, other
23 than those works installed and operations which may be
24 initiated to offset losses caused by increased flood control
25 channelization.

26 (j) Year - A calendar year from January 1 through
27 December 31. The term "annual" shall refer to the same period
28 of time.

29 (k) Orange County Judgment - The final judgment
30 in Orange County Water District v. City of Chino, et al.,
31 Orange County Superior Court No. 117628, as it may from time to
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time be modified.

(1) Return Flow - That portion of the water applied for use in any particular ground water basin which subsequently reaches the ground water body in that basin.

(m) Five Year Period - a period of five consecutive years.

V

EXTRACTIONS FROM THE SAN BERNARDINO BASIN AREA

(a) For Use by Plaintiffs. The average annual extractions from the San Bernardino Basin Area delivered for use in each service area by each Plaintiff for the five year period ending with 1963 are hereby determined to be as set forth in Table B-1 of Appendix "B". The amount for each such Plaintiff delivered for use in each service area as set forth in Table B-1 shall be designated, for purposes of this Judgment, as its "base right" for such service area.

(b) For Use by Others. The total actual average annual extractions from the San Bernardino Basin Area by entities other than Plaintiffs for use within San Bernardino County for the five year period ending with 1963 are assumed to be 165,407 acre feet; the correct figure shall be determined by the Watermaster as herein provided.

VI

SAN BERNARDINO BASIN AREA RIGHTS AND REPLENISHMENT

(a) Determination of Natural Safe Yield. The natural safe yield of the San Bernardino Basin Area shall be computed by the Watermaster, reported to and determined initially by supplemental order of this Court, and thereafter

1 shall be subject to the continuing jurisdiction thereof.

2 (b) Annual Adjusted Rights of Plaintiffs.

3 1. The annual "adjusted right" of each
4 Plaintiff to extract water from the San Bernardino
5 Basin Area for use in each service area designated
6 in Table B-1 shall be equal to the sum of the
7 following:

8 (a) its base right for such service area, until
9 the natural safe yield of the San Bernardino Basin
10 Area is determined, and thereafter its percentage
11 of such natural safe yield determined by the
12 methods used in Table B-2; and (b) an equal
13 percentage for each service area of any new
14 conservation, provided the conditions of the
15 subparagraph 2 below have been met.

16 2. In order that the annual adjusted
17 right of each such Plaintiff shall include its
18 same respective percentage of any new conservation,
19 such Plaintiff shall pay its proportionate share
20 of the costs thereof. Each Plaintiff shall have
21 the right to participate in new conservation projects,
22 under procedures to be determined by the Watermaster
23 for notice to Plaintiffs of the planned construction
24 of such projects. With respect to any new
25 conservation brought about by Federal installations,
26 the term "costs" as used herein shall refer to any
27 local share required to be paid in connection with
28 such project. Each Plaintiff shall make its
29 payment at times satisfactory to the constructing
30 agency, and new conservation shall be credited to
31 any participating Plaintiff as such conservation is
32 effected.

1 3. In any five year period, each
2 Plaintiff shall have the right to extract from the
3 San Bernardino Basin Area for use in each service
4 area designated in Table B-1 an amount of water
5 equal to five times its adjusted right for such
6 service area; provided, however, that extractions by
7 each Plaintiff in any year in any service area shall
8 not exceed such Plaintiff's adjusted right for that
9 service area by more than 30 percent.

10 4. If the natural safe yield of the
11 San Bernardino Basin Area has not been determined by
12 January 1, 1972, the initial determination thereof
13 shall be retroactive to that date and the rights
14 of the Plaintiffs, and the replenishment
15 obligation of San Bernardino Valley as hereinafter
16 set forth, shall be adjusted as of such date. Any
17 excess extractions by Plaintiffs shall be charged
18 against their respective adjusted rights over the
19 next five year period, or in the alternative,
20 Plaintiffs may pay to San Bernardino Valley the
21 full cost of any replenishment which it has pro-
22 vided as replenishment for such excess extractions.
23 Any obligation upon San Bernardino Valley to pro-
24 vide additional replenishment, by virtue of such
25 retroactive determination of natural safe yield,
26 may also be discharged over such next five year
27 period.

28 5. Plaintiffs and each of them and
29 their agents and assigns are enjoined from extracting
30 any more water from the San Bernardino Basin Area than
31 is permitted under this Judgment. Changes in place
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1 of use of any such water from one service area to
2 another shall not be made without the prior
3 approval of Court upon a finding of compliance
4 with Paragraph XV(b) of this Judgment. So long
5 as San Bernardino Valley is in compliance with all
6 its obligations hereunder, and Plaintiffs are
7 allowed to extract the water provided for in this
8 Judgment, Plaintiffs are further enjoined from
9 bringing any action to limit the water extracted
10 from the San Bernardino Basin Area for use within
11 San Bernardino Valley.

12 6. Nothing in this Judgment shall
13 prevent future agreements between San Bernardino
14 Valley and Western under which additional
15 extractions may be made from the San Bernardino Basin
16 Area, subject to the availability of imported water
17 not required by San Bernardino Valley, and subject
18 to payment satisfactory to San Bernardino Valley
19 for replenishment required to compensate for such
20 additional extractions.

21
22 (c) San Bernardino Valley Replenishment. San
23 Bernardino Valley shall provide imported water for
24 replenishment of the San Bernardino Basin Area at least equal
25 to the amount by which extractions therefrom for use within
26 San Bernardino County exceed during any five year period the
27 sum of: (a) five times the total average annual extractions
28 determined under Paragraph V(b) hereof, adjusted as may be
29 required by the natural safe yield of the San Bernardino Basin
30 Area; and (b) any new conservation to which users within San
31 Bernardino Valley are entitled. Such replenishment shall be

1 supplied in the year following any five year period; provided
2 that during the first five year period, San Bernardino Valley
3 shall supply annual amounts on account of its obligations
4 hereunder, and such amounts shall be not less than fifty
5 percent of the gross amount of excess extractions in the
6 previous year.

7 1. Against its replenishment obligation
8 over any five year period San Bernardino Valley shall
9 receive credit for that portion of such excess
10 extractions that returns to the ground water of the
11 San Bernardino Basin Area.

12 2. San Bernardino Valley shall also
13 receive credit against any future replenishment
14 obligations for all replenishment which it provides
15 in excess of that required herein, and for any
16 amounts which may be extracted without replenishment
17 obligation, which in fact are not extracted.

18 (d) In this subparagraph (d), "person" and "entity"
19 mean only those persons and entities, and their successors
20 in interest, which have stipulated with the parties to this
21 Judgment within six months after its entry to accept this
22 Judgment.

23 San Bernardino Valley agrees that the base rights of
24 persons or entities other than Plaintiffs to extract water
25 from the San Bernardino Basin Area for use within San
26 Bernardino Valley will be determined by the average annual
27 quantity extracted by such person or entity during the five
28 year period ending with 1963. After the natural safe yield
29 of the San Bernardino Basin Area is determined hereunder, such
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1 base rights will be adjusted to such natural safe yield; the
2 adjusted right of each such person or entity shall be that
3 percentage of natural safe yield as determined hereunder from
4 time to time which the unadjusted right of such person or
5 entity is of the amount determined under Paragraph V(b).

6 San Bernardino Valley further agrees that in the
7 event the right to extract water of any of such persons or
8 entities in the San Bernardino Basin Area is adjudicated and
9 legal restrictions placed on such extractions which prevent
10 extracting of water by said persons or entities in an amount
11 equal to their base rights, or after natural safe yield is
12 determined, their adjusted rights, San Bernardino Valley will
13 furnish to such persons or entities or recharge the ground
14 water resources in the area of extraction for their benefit
15 with imported water, without direct charge to such persons or
16 entities therefor, so that the base rights, or adjusted
17 rights, as the case may be, may be taken by the person or
18 entity.

19 Under the provisions hereof relating to furnishing
20 of such water by San Bernardino Valley, such persons or
21 entities shall be entitled to extract in addition to their
22 base rights or adjusted rights any quantities of water spread
23 for repumping in their area of extractions, which has been
24 delivered to them by a mutual water company under base rights
25 or adjusted base rights included by the Watermaster under the
26 provisions of Paragraph V (b) hereof. Extractions must be
27 made within three years of spreading to so qualify.
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VII

WATER DISCHARGED ACROSS THE BUNKER HILL DIKE

San Bernardino Valley shall keep in force an agreement with the City of San Bernardino that the present annual quantity of municipal sewage effluent discharged across Bunker Hill Dike, assumed for all purposes herein to be 16,000 acre feet annually, shall be committed to the discharge of the downstream obligations imposed on San Bernardino Valley under this Judgment or under the Orange County Judgment, and that such effluent shall comply with the requirements of the Santa Ana River Basin Regional Water Quality Control Board in effect December 31, 1968.

VIII

EXTRACTIONS FROM COLTON BASIN AREA AND RIVERSIDE
BASIN AREA IN SAN BERNARDINO COUNTY.

(a) The average annual extractions from the Colton Basin Area and that portion of the Riverside Basin Area within San Bernardino County, for use outside San Bernardino Valley, for the five year period ending with 1963 are assumed to be 3,349 acre feet and 20,191 acre feet, respectively; the correct figures shall be determined by the Watermaster as herein provided.

(b) Over any five year period, there may be extracted from each such Basin Area for use outside San Bernardino Valley, without replenishment obligation, an amount equal to five times such annual average for the Basin Area; provided, however, that if extractions in any year exceed such average by more than 20 percent, Western shall provide replenishment in the following year equal to the excess

1 extractions over such 20 percent peaking allowance.

2 (c). To the extent that extractions from each such
3 Basin Area for use outside San Bernardino Valley exceed the
4 amounts specified in the next preceding Paragraph (b), Western
5 shall provide replenishment. Except for any extractions in
6 excess of the 20 percent peaking allowance, such replenishment
7 shall be supplied in the year following any five year period,
8 and shall not be from reclaimed water produced within San
9 Bernardino Valley. Such replenishment shall also be of a
10 quality at least equal to the water extracted from the Basin
11 Area being recharged; provided, that water from the State Water
12 Project shall be deemed to be of acceptable quality.
13 Replenishment shall be supplied to the Basin Area from which
14 any excess extractions have occurred and in the vicinity of
15 the place of the excess extractions to the extent required to
16 preclude influence on the water level in the three wells below
17 designated; provided that discharge of imported water into the
18 Santa Ana River or Warm Creek from a connection on the State
19 Aqueduct near the confluence thereof, if released in accordance
20 with a schedule approved by the Watermaster to achieve
21 compliance with the objectives of this Judgment, shall satisfy
22 any obligation of Western to provide replenishment in the Colton
23 Basin Area, or that portion of the Riverside Basin Area in San
24 Bernardino County, or the Riverside Basin Area in Riverside
25 County.

26 (d) Extractions from the Colton Basin Area and that
27 portion of the Riverside Basin Area within San Bernardino County,
28 for use within San Bernardino Valley, shall not be limited.
29 However, except for any required replenishment by Western,
30 San Bernardino Valley shall provide the water to maintain the
31 static water levels in the area, as determined by wells numbered
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1 1S 4W 21 Q3, 1S 4W 29 H1, and 1S 4W 29 Q1 at an average level
2 no lower than that which existed in the Fall season of 1963.
3 Such 1963 average water level is hereby determined to be 822.04
4 feet above sea level. In future years, the level shall be
5 computed by averaging the lowest static water levels in each
6 of the three wells occurring at or about the same time of the
7 year, provided that no measurements will be used which reflect
8 the undue influence of pumping in nearby wells, or in the
9 three wells, or pumping from the Riverside Basin in Riverside
10 County in excess of that determined pursuant to Paragraph IX(a)
11 hereof.

12 (e) Extractions by Plaintiffs from the Colton Basin
13 Area and the portion of the Riverside Basin Area in San
14 Bernardino County may be transferred to the San Bernardino
15 Basin Area if the level specified in Paragraph (d) above is
16 not maintained, but only to the extent necessary to restore
17 such 1963 average water level, provided that Western is not
18 in default in any of its replenishment obligations. San
19 Bernardino Valley shall be required to replenish the San
20 Bernardino Basin Area in an amount equal to any extractions so
21 transferred. San Bernardino Valley shall be relieved of
22 responsibility toward the maintenance of such 1963 average water
23 level to the extent that Plaintiffs have physical facilities
24 available to accommodate such transfers of extractions, and
25 insofar as such transfers can be legally accomplished.

26 (f) The Colton Basin Area and the portion of the
27 Riverside Basin Area in San Bernardino County constitute a major
28 source of water supply for lands and inhabitants in both San
29 Bernardino Valley and Western, and the parties hereto have a
30 mutual interest in the maintenance of water quality in these
31 Basin Areas and in the preservation of such supply. If
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1 the water quality in such Areas, as monitored by the City of
2 Riverside wells along the river, falls below the Objectives set
3 therefor by the Santa Ana River Basin Regional Water Quality
4 Control Board, the Court shall have jurisdiction to modify the
5 obligations of San Bernardino Valley to include, in addition
6 to its obligation to maintain the average 1963 water level,
7 reasonable provisions for the maintenance of such water quality.

8 (g) The primary objectives of Paragraph VIII and
9 related provisions are to allow maximum flexibility to San
10 Bernardino Valley in the operation of a coordinated
11 replenishment and management program, both above and below
12 Bunker Hill Dike; to protect San Bernardino Valley against
13 increased extractions in the area between Bunker Hill Dike and
14 Riverside Narrows, which without adequate provision for
15 replenishment might adversely affect base flow at Riverside
16 Narrows, for which it is responsible under the Orange County
17 Judgment; and to protect the area as a major source of ground
18 water supply available to satisfy the historic extractions
19 therefrom for use within Western, without regard to the method
20 of operation which may be adopted by San Bernardino Valley for
21 the San Bernardino Basin Area, and without regard to the effect
22 of such operation upon the historic supply to the area below
23 Bunker Hill Dike.

24 If these provisions should prove either inequitable or
25 unworkable, the Court upon the application of any party hereto
26 shall retain jurisdiction to modify this Judgment so as to
27 regulate the area between Bunker Hill Dike and Riverside Narrows
28 on a safe yield basis; provided that under such method of
29 operation, (1) base rights shall be determined on the basis of
30 total average annual extractions for use within San Bernardino
31 Valley and Western, respectively, for the five year period ending

1 with 1963; (2) such base rights for use in both Districts shall
2 be subject to whatever adjustment may be required by the safe
3 yield of the area, and in the aggregate shall not be exceeded
4 unless replenishment therefor is provided; (3) in calculating
5 safe yield, the outflow from the area at Riverside Narrows shall
6 be determined insofar as practical by the base flow obligations
7 imposed on San Bernardino Valley under the Orange County
8 Judgment; and (4) San Bernardino Valley shall be required to
9 provide replenishment for any deficiency between the actual
10 outflow and the outflow obligation across Bunker Hill Dike as
11 established by safe yield analysis using the base period of
12 1934 through 1960.

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14 IX

15 EXTRACTIONS FROM THE PORTION OF RIVERSIDE BASIN AREA
16 IN RIVERSIDE COUNTY WHICH IS TRIBUTARY TO RIVERSIDE NARROWS.

17 (a) The average annual extractions from the portion
18 of the Riverside Basin Area in Riverside County which is
19 tributary to Riverside Narrows, for use in Riverside County,
20 for the five year period ending with 1963 are assumed to be
21 30,044 acre feet; the correct figures shall be determined by
22 the Watermaster as herein provided.

23 (b) Over any five year period, there may be
24 extracted from such Basin Area, without replenishment
25 obligation, an amount equal to five times such annual average
26 for the Basin Area; provided, however, that if extractions in
27 any year exceed such average by more than 20 percent, Western
28 shall provide replenishment in the following year equal to the
29 excess extractions over such 20 percent peaking allowance.

30 (c) To the extent that extractions from such Basin
31 Area exceed the amounts specified in the next preceding
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1 Paragraph (b), Western shall provide replenishment. Except
2 for any extractions in excess of the 20 percent peaking
3 allowance, such replenishment shall be supplied in the year
4 following any five year period, and shall be provided at or
5 above Riverside Narrows.

6 (d) Western shall also provide such replenishment
7 to offset any reduction in return flow now contributing to the
8 base flow at Riverside Narrows, which reduction in return
9 flow results from the conversion of agricultural uses of water
10 within Western to domestic or other uses connected to sewage
11 or waste disposal systems, the effluent from which is not
12 tributary to the rising water at Riverside Narrows.

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14 X

15 REPLENISHMENT TO OFFSET NEW EXPORTS OF WATER TO AREAS
16 NOT TRIBUTARY TO RIVERSIDE NARROWS.

17 Certain average annual amounts of water extracted
18 from the San Bernardino Basin Area and the area downstream
19 therefrom to Riverside Narrows during the five year period
20 ending in 1963 have been exported for use outside of the area
21 tributary to Riverside Narrows and are assumed to be 50,667
22 acre feet annually as set forth in Table C-1 of Appendix "C";
23 the correct amount shall be determined by the Watermaster as
24 herein provided. Western shall be obligated to provide
25 replenishment at or above Riverside Narrows for any increase
26 over such exports by Western or entities within it from such
27 areas for use within areas not tributary to Riverside Narrows.
28 San Bernardino Valley shall be obligated to provide
29 replenishment for any increase over the exports from San
30 Bernardino Valley for use in any area not within Western nor
31 tributary to Riverside Narrows as set forth in Table C-2 of
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1 Appendix. "C", such amounts being subject to correction by the
2 Watermaster, or for any exports from the San Bernardino Basin
3 Area for use in the Yucaipa, San Timoteo, Oak Glen and
4 Beaumont Basins.

5 XI

6 REPLENISHMENT CREDITS AND ADJUSTMENT FOR QUALITY

7
8 (a) All replenishment provided by Western under
9 Paragraph IX and all credits received against such
10 replenishment obligation shall be subject to the same adjustments
11 for water quality applicable to base flow at Riverside Narrows,
12 as set forth in the Orange County Judgment.

13 (b) Western shall receive credit against its
14 replenishment obligations incurred under this Judgment for the
15 following:

16 1. As against its replenishment obligation
17 under Paragraph VIII, any return flow to the Colton
18 Basin Area or the portion of the Riverside Basin Area
19 within San Bernardino County, respectively, resulting
20 from any excess extractions therefrom; and as
21 against its replenishment obligation under Paragraph
22 IX, any return flow to the portion of the Riverside
23 Basin Area in Riverside County, which contributes
24 to the base flow at Riverside Narrows, resulting
25 from any excess extractions therefrom, or from the
26 Riverside Basin Area in San Bernardino County, or
27 from the Colton Basin Area.

28 2. Subject to adjustment under
29 Paragraph (a) hereof, any increase over the present
30 amounts of sewage effluent discharged from
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1 treatment plants within Riverside County which are
2 tributary to Riverside Narrows, and which results
3 from the use of imported water.

4 3. Any replenishment which may be pro-
5 vided in excess of that required; any amounts which
6 hereunder are allowed to be extracted from the
7 Colton and Riverside Basin Areas without
8 replenishment obligation by Western, and which in
9 fact are not extracted; any storm flows conserved
10 between Bunker Hill Dike and Riverside Narrows by
11 works financed solely by Western, or entities within
12 it, which would not otherwise contribute to base
13 flow at Riverside Narrows; and any return flow
14 from imported water used in Riverside County which
15 contributes to base flow at Riverside Narrows;
16 provided, however, that such use of the underground
17 storage capacity in each of the above situations
18 does not adversely affect San Bernardino Valley
19 in the discharge of its obligations at Riverside
20 Narrows under the Orange County Judgment, nor
21 interfere with the accomplishment by San Bernardino
22 Valley of the primary objectives of Paragraph VIII,
23 as stated in Subdivision (g).

24 (c) The replenishment obligations of Western under
25 this Judgment shall not apply during such times as amounts of
26 base flow at Riverside Narrows and the amounts of water stored
27 in the ground water resources below Bunker Hill Dike and
28 tributary to the maintenance of such flow are found by Order of
29 the Court to be sufficient to satisfy any obligation which
30 San Bernardino Valley may have under this Judgment, or under the
31

1 Orange County Judgment, and if the Court further finds by Order
2 that during such times any such increase in pumping, changes
3 in use or exports would not adversely affect San Bernardino
4 Valley in the future.

5 (d) The replenishment obligations of San Bernardino
6 Valley under Paragraph X of this Judgment for increase in
7 exports from the Colton and Riverside Basin Areas within San
8 Bernardino Valley below the Bunker Hill Dike shall not apply
9 during such times as the amounts of water in the ground water
10 resources of such area are found by Order of the Court to be
11 sufficient to satisfy the obligations which San Bernardino
12 Valley may have to Plaintiffs under this Judgment, and if the
13 Court further finds by Order that during such times any such
14 increases in exports would not adversely affect Plaintiffs in
15 the future.

16
17 XII

18 CONVEYANCE OF WATER BY SAN BERNARDINO VALLEY
19 TO RIVERSIDE NARROWS.

20 If San Bernardino Valley determines that it will
21 convey reclaimed sewage effluent, or other water, to or near
22 Riverside Narrows, to meet its obligations under this or the
23 Orange County Judgment, the City of Riverside shall make
24 available to San Bernardino Valley for that purpose any unused
25 capacity in the former Riverside Water Company canal, and the
26 Washington and Monroe Street storm drains, without cost except
27 for any alterations or capital improvements which may be
28 required, or any additional maintenance and operation costs which
29 may result. The use of those facilities shall be subject to the
30 requirements of the Santa Ana River Basin Regional Water Quality
31 Control Board and of the State Health Department, and compliance
32

1 therewith shall be San Bernardino Valley's responsibility.

2
3 XIII

4 WATERMASTER

5 (a) This Judgment and the instructions and
6 subsequent orders of this Court shall be administered and
7 enforced by a Watermaster. The parties hereto shall make such
8 measurements and furnish such information as the Watermaster
9 may reasonably require, and the Watermaster may verify such
10 measurements and information and obtain additional measurements
11 and information as the Watermaster may deem appropriate.

12 (b) The Watermaster shall consist of a committee
13 of two persons. San Bernardino Valley and Western shall each
14 have the right to nominate one of such persons. Each such
15 nomination shall be made in writing, served upon the other
16 parties to this Judgment, and filed in Court. Such person shall
17 be appointed by and serve at the pleasure of and until further
18 order of this Court. If either Western or San Bernardino Valley
19 shall at any time nominate a substitute appointee in place of
20 the last appointee to represent it, such appointee shall be
21 appointed by the Court in place of such last appointee.

22 (c) Appendix "D" to this Judgment contains some of
23 the data which have been used in preparation of this Judgment,
24 and shall be utilized by the Watermaster in connection with
25 any questions of interpretation.

26 (d) Each and every finding and determination of the
27 Watermaster shall be made in writing certified to be by
28 unanimous action of both members of the Watermaster committee.
29 In the event of failure or inability of such Watermaster
30 Committee to reach agreement, the Watermaster committee may
31 determine to submit the dispute to a third person to be selected
32

1 by them, or if they are unable to agree on a selection, to be
2 selected by the Court, in which case the decision of the third
3 person shall be binding on the parties; otherwise the fact,
4 issue, or determination in question shall forthwith be
5 certified to this Court by the Watermaster, and after due notice
6 to the parties and opportunity for hearing, said matter shall
7 be determined by order of this Court, which may refer the
8 matter for prior recommendation to the State Water Resources
9 Control Board. Such order of the Court shall be a determination
10 by the Watermaster within the meaning of this Judgment.

11 (e) The Watermaster shall report to the Court and
12 to each party hereto in writing not more than seven (7) months
13 after the end of each year, or within such other time as the
14 Court may fix, on each determination made by it pursuant to this
15 Judgment, and such other items as the parties may mutually
16 request or the Watermaster may deem to be appropriate. All of
17 the books and records of the Watermaster which are used in the
18 preparation of, or are relevant to, such reported data,
19 determinations and reports shall be open to inspection by the
20 parties hereto. At the request of any party this Court will
21 establish a procedure for the filing and hearing of objections
22 to the Watermaster's report.

23 (f) The fees, compensation and expenses of each
24 person on the Watermaster shall be borne by the District which
25 nominated such person. All other Watermaster service costs and
26 expenses shall be borne by San Bernardino Valley and Western
27 equally.

28 (g) The Watermaster shall initially compute and
29 report to the Court the natural safe yield of the San Bernardino
30 Basin Area, said computation to be based upon the cultural
31

1 conditions equivalent to those existing during the five
2 calendar year period ending with 1963.

3 (h) The Watermaster shall as soon as practical
4 determine the correct figures for Paragraphs V(b), VI(b)1,
5 VIII(a), IX(a) and X, as the basis for an appropriate
6 supplemental order of this Court.

8 XIV

9 CONTINUING JURISDICTION OF THE COURT

10 (a) The Court hereby reserves continuing
11 jurisdiction of the subject matter and parties to this Judgment,
12 and upon application of any party, or upon its own motion, may
13 review and redetermine, among other things, the following
14 matters and any matters incident thereto:

15 1. The hydrologic condition of any one or
16 all of the separate basins described in this Judgment in order
17 to determine from time to time the safe yield of the San
18 Bernardino Basin Area.

19 2. The desirability of appointing a
20 different Watermaster or a permanent neutral member of the
21 Watermaster, or of changing or more clearly defining the duties
22 of the Watermaster.

23 3. The desirability of providing for increases
24 or decreases in the extraction of any particular party because
25 of emergency requirements or in order that such party may
26 secure its proportionate share of its rights as determined
27 herein.

28 4. The adjusted rights of the Plaintiffs as
29 required to comply with the provisions hereof with respect to
30 changes in the natural safe yield of the San Bernardino Basin
31

1 Area. If such changes occur, the Court shall adjudge that the
2 adjusted rights and replenishment obligations of each party
3 shall be changed proportionately to the respective base rights.

4 5. Conforming the obligations of San
5 Bernardino Valley under this Judgment to the terms of any new
6 judgment hereafter entered adjudicating the water rights within
7 San Bernardino Valley, if inconsistencies of the two judgments
8 impose hardship on San Bernardino Valley.

9 6. Adjusting the figures in Paragraphs V(b),
10 VI(b) 1, VIII(a) IX(a), and X, to conform to determination
11 by the Watermaster.

12 7. Credit allowed for return flow in the San
13 Bernardino Basin Area if water levels therein drop to the point
14 of causing undue hardship upon any party.

15 8. Other matters not herein specifically set
16 forth which might occur in the future and which would be
17 of benefit to the parties in the utilization of the surface and
18 ground water supply described in this Judgment, and not
19 inconsistent with the respective rights of the parties as herein
20 established and determined.

21 (b) Any party may apply to the Court under its
22 continuing jurisdiction for any appropriate modification of
23 this Judgment if its presently available sources of imported
24 water are exhausted and it is unable to obtain additional
25 supplies of imported water at a reasonable cost, or if there is
26 any substantial delay in the delivery of imported water through
27 the State Water Project.

XV
SAVING CLAUSES

(a) Nothing in this Judgment precludes San Bernardino Valley, Western, or any other party from exercising such rights as it may have or obtain under law to spread, store underground and recapture imported water, provided that any such use of the underground storage capacity of the San Bernardino Basin Area by Western or any entity within it shall not interfere with any replenishment program of the Basin Area.

(b) Changes in the place and kind of water use, and in the transfer of rights to the use of water, may be made in the absence of injury to others or prejudice to the obligations of either San Bernardino Valley or Western under Judgment or the Orange County Judgment.

(c) If any Plaintiff shall desire to transfer all or any of its water rights to extract water within San Bernardino Valley to a person, firm, or corporation, public or private, who or which is not then bound by this Judgment, such Plaintiff shall as a condition to being discharged as hereinafter provided cause such transferee to appear in this action and file a valid and effective express assumption of the obligations imposed upon such Plaintiff under this Judgment as to such transferred water rights. Such appearance and assumption of obligation shall include the filing of a designation of the address to which shall be mailed all notices, requests, objections, reports and other papers permitted or required by the terms of this Judgment.

If any Plaintiff shall have transferred all of its said water rights and each transferee not theretofore bound by this Judgment as a Plaintiff shall have appeared in this action

1 and filed a valid and effective express assumption of the
2 obligations imposed upon such Plaintiff under this Judgment as
3 to such transferred water rights, such transferring Plaintiff
4 shall thereupon be discharged from all obligations hereunder.
5 If any Plaintiff shall cease to own any rights in and to the water
6 supply declared herein and shall have caused the appearance and
7 assumption provided for in the third preceding sentence with
8 respect to each voluntary transfer, then upon application to
9 this Court and after notice and hearing such Plaintiff shall
10 thereupon be relieved and discharged from all further
11 obligations hereunder. Any such discharge of any Plaintiff
12 hereunder shall not impair the aggregate rights of defendant
13 San Bernardino Valley or the responsibility hereunder of the
14 remaining Plaintiffs or any of the successors.

15 (d) Non-use of any right to take water as provided
16 herein shall not result in any loss of the right. San
17 Bernardino Valley does not guarantee any of the rights set out
18 herein for Western and the other Plaintiffs as against the
19 claims of third parties not bound hereby. If Western or the
20 other Plaintiffs herein should be prevented by acts of third
21 parties within San Bernardino County from extracting the
22 amounts of water allowed them by this Judgment, they shall have
23 the right to apply to this Court for any appropriate relief,
24 including vacation of this Judgment, in which latter case all
25 parties shall be restored to their status prior to this
26 Judgment insofar as possible.

27 (e) Any replenishment obligation imposed hereunder
28 on San Bernardino Valley may be deferred until imported water
29 first is available to San Bernardino Valley under its contract
30 with the California Department of Water Resources and the
31

1 obligation so accumulated may be discharged in five
2 approximately equal annual installments thereafter.

3 (F) No agreement has been reached concerning the
4 method by which the cost of providing replenishment will be
5 financed, and no provision of this Judgment, nor its failure
6 to contain any provision, shall be construed to reflect any
7 agreement relating to the taxation or assessment of extractions.

8
9 XVI

10 EFFECTIVE DATE

11
12 The provisions of Paragraphs III and V to XII of this
13 Judgment shall be in effect from and after January 1, 1971;
14 the remaining provisions are in effect immediately.

15 XVII

16 COSTS

17
18 No party shall recover its costs herein as against
19 any other party.

20
21 THE CLERK WILL ENTER THIS JUDGMENT FORTHWITH.

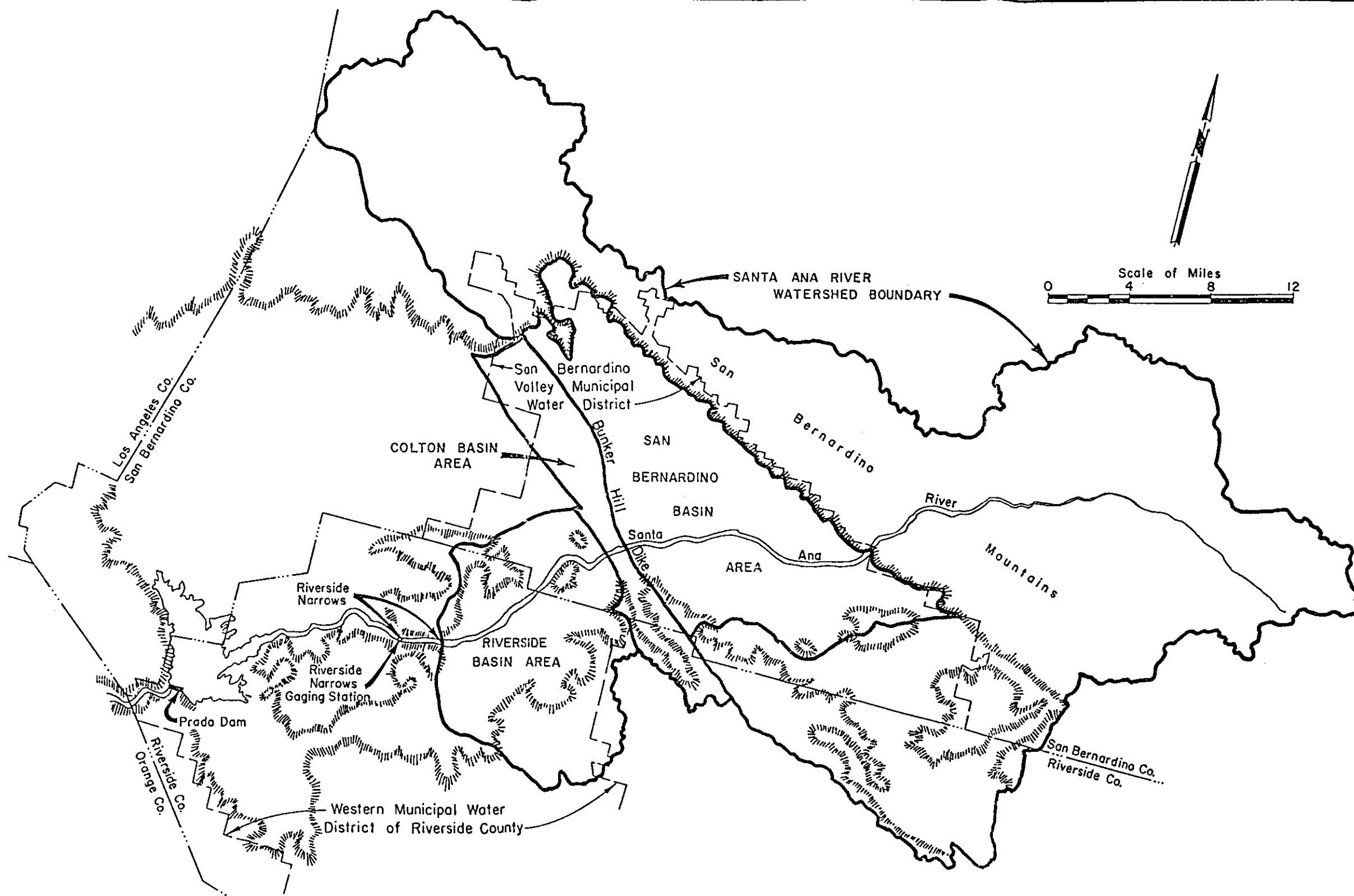
22 DATED: *April 17, 1969*

23
24
25 ENTERED

26 APR 17 1969

27
28 *[Signature]*
29 JUDGE OF THE SUPERIOR COURT

30 JUDGMENT BOOK *124* PG *42*



MAP SHOWING

SAN BERNARDINO BASIN AREA, COLTON BASIN AREA, AND
 RIVERSIDE BASIN AREA SITUATED WITHIN SAN BERNARDINO
 COUNTY; RIVERSIDE BASIN AREA WITHIN RIVERSIDE COUNTY;
 BUNKER HILL DIKE; RIVERSIDE NARROWS; AND BOUNDARIES OF
 SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT & WESTERN
 MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY.

APPENDIX B
TABLE B-1

EXTRACTIONS BY PLAINTIFFS FROM THE SAN
BERNARDINO BASIN AREA FOR AVERAGE OF 5-YEAR
PERIOD ENDING WITH 1963

(All Values in Acre Feet)
Classified According to Service Area

<u>Plaintiff</u>	<u>Total Extractions in San Bernardino Basin Area</u>	<u>Delivery to San Bernardino Basin Area</u>	<u>Delivery to Colton Basin Area & Riverside Basin Area in San Bernardino County</u>	<u>Delivery to Areas Outside San Bernardino Valley</u>
City of Riverside (including those rights acquired as successor to the Riverside Water Company and The Gage Canal Company)	53,448	1462	1260	50,726
Riverside High- Land Water Company	4,399	0	2509	1,890
Agua Mansa Water Company, and Meeks & Daley Water Company	8,026	0	326	7,700
The Regents of the University of California	581	0	0	581
Total	66,454	1,462	4,095	60,897

APPENDIX B
TABLE B-2

PLAINTIFFS' PERCENTAGES OF BASE RIGHT
TO TOTAL PRODUCTION FROM SAN BERNARDINO
VALLEY BASIN AREA,

231,861 Acre Feet Annually,
For 5-Year Average Ending With 1963
Classified According to Service Area

<u>Plaintiff</u>	<u>Delivery</u> <u>to San</u> <u>Bernardino</u> <u>Basin Area</u>	<u>Delivery</u> <u>to Colton</u> <u>Basin Area</u> <u>& Riverside</u> <u>Basin Area</u> <u>in San</u> <u>Bernardino</u> <u>County</u>	<u>Delivery</u> <u>to Areas</u> <u>Outside San</u> <u>Bernardino</u> <u>Valley</u>
City of Riverside (including those rights acquired as successor to the Riverside Water Company and The Gage Canal Company)	.630	.543	21,878
Riverside Highland Water Company		1,082	0.815
Aqua Mansa Water Company, and Meeks & Daley Water Company		.141	3.321
The Regents of the University of California			0.250
<u>Total</u>	6.630	1.766	26.264

APPENDIX C
TABLE C-1

EXTRACTIONS FOR USE WITHIN WESTERN
FROM
THE SAN BERNARDINO BASIN AREA, COLTON BASIN AREA,
AND THE RIVERSIDE BASIN AREA
FOR USE ON LANDS THAT ARE NOT TRIBUTARY
TO THE RIVERSIDE NARROWS FOR
AVERAGE OF FIVE-YEAR PERIOD ENDING IN 1963

<u>Extractor</u>	<u>Five-Year Average Ac. Ft.</u>
City of Riverside, including Irrigation Division water extracted by Gage Canal Co. and former Riverside Water Co.	30,657
Meeks & Daley Water Co., Agua Mansa Water Co., and Temescal Water Co., including water received from City of Riverside	13,731
Extractions delivered by West Riverside Canal received from Twin Buttes Water Co., La Sierra Water Co., Agua Mansa Water Co., Salazar Water Co., West Riverside 350" Water Co., and Jurupa Water Co.	5,712
Rubidoux Community Services District	531
Jurupa Hills Water Co.	<u>36</u>
<u>TOTAL</u>	50,667

APPENDIX C
TABLE C-2

EXTRACTIONS FOR USE WITHIN SAN BERNARDINO COUNTY
FROM
SAN BERNARDINO BASIN AREA AND COLTON BASIN AREA
FOR USE ON LANDS NOT TRIBUTARY TO
DIVERSITY WATERS FOR AVERAGE OF
FIVE-YEAR PERIOD ENDING WITH 1983

(ALL VALUES IN ACRE FEET)

<u>Entity</u>	<u>San Bernardino Basin Area</u>	<u>Colton Basin Area</u>	<u>Total</u>
Fontana Union Water Co.	14,272	365	14,637
West San Bernardino County Water District	2,961	947	3,908
City of Rialto			700
<u>TOTAL</u>			19,245

APPENDIX D
TABLE D-1

EXTRACTIONS FROM SAN BERNARDINO BASIN AREA
FOR THE AVERAGE OF FIVE-YEAR PERIOD ENDING WITH 1963
FOR USE WITHIN SAN BERNARDINO COUNTY

(ALL VALUES IN ACRE FEET)

<u>Basin</u>	<u>Five Year Avg. 1959-63</u>
Beaumont	10,064
Big Bear	1,171
Borea Canyon	91
Bunker Hill	181,600
City Creek	337
Cook Canyon	197
Devil Canyon	3,326
Devil Creek	42
Lower Cajon	2,090
Little San Creek	15
Lytle	29,364
Mill Creek	11,084
Oak Glen	935
Plunge Creek	1,265
Santa Ana	1,790
Strawberry Creek	291
San Timoteo	2,272
Waterman Canyon	367
Yucaipa	<u>13,837</u>
Upper Basin Total	260,139
Less: Beaumont	
Oak Glen	
San Timoteo	27,107
Yucaipa	
Subtotal	<u>233,032</u>
Less Big Bear	<u>1,171</u>
Subtotal	231,861
Less extractions for use outside San Bernardino County	<u>60,897</u>
Extractions from San Bernardino for use in San Bernardino County	170,964

APPENDIX D
TABLE D-2

EXTRACTIONS FROM
COLTON BASIN AREA FOR AVERAGE OF
FIVE-YEAR PERIOD ENDING WITH 1963
BY SAN BERNARDINO AND RIVERSIDE COUNTY ENTITIES
FOR USE WITHIN EACH COUNTY

(VALUES IN ACRE FEET)

<u>Extractor</u>	<u>Place of Use</u>		<u>Total</u>
	<u>San Bernardino Co.</u>	<u>Riverside Co.</u>	
San Bernardino County Entities	8,480	0	8,480
Riverside County Entities	<u>147</u>	<u>3,349</u>	<u>3,496</u>
<u>TOTAL EXTRACTIONS</u>	8,627	3,349	11,976

APPENDIX D
TABLE D-3

EXTRACTIONS FROM
RIVERSIDE BASIN AREA IN SAN BERNARDINO COUNTY
FOR AVERAGE FIVE-YEAR PERIOD ENDING WITH 1963
BY SAN BERNARDINO AND RIVERSIDE COUNTY ENTITIES
FOR USE WITHIN EACH COUNTY

(VALUES IN ACRE FEET)

<u>Extractor</u>	<u>Place of Use</u>		<u>Total</u>
	<u>San Bernardino Co.</u>	<u>Riverside Co.</u>	
San Bernardino County Entities	9,582	0	9,582
Riverside County Entities	<u>3,929</u>	<u>20,191</u>	<u>24,120</u>
<u>TOTAL EXTRACTIONS</u>	13,511	20,191	33,702

APPENDIX D
TABLE D-4

EXTRACTIONS FROM
SAN BERNARDINO BASIN AREA, COLTON BASIN AREA
AND RIVERSIDE BASIN AREA USED WITHIN
RIVERSIDE COUNTY FOR THE AVERAGE
FIVE-YEAR PERIOD ENDING WITH 1963

(ALL VALUES IN ACRE FEET)

<u>Basin</u>	<u>Five-Year Average</u>
San Bernardino Basin Area	60,897
Colton Basin Area	3,349
Riverside Basin Area in San Bernardino County	20,191
Riverside Basin Area in Riverside County	<u>30,044</u>
<u>TOTAL</u>	114,481

APPENDIX D
TABLE D-5

IRRIGATED ACREAGE IN RIVERSIDE BASIN AREA
IN RIVERSIDE COUNTY PRESENTLY TRIBUTARY
TO RIVERSIDE NARROWS WHICH
UPON CONVERSION TO URBAN USES
REQUIRING SEWAGE DISPOSAL THROUGH
THE RIVERSIDE TREATMENT PLANT WILL
BE DISCHARGED TO THE RIVER BELOW
RIVERSIDE NARROWS

<u>Entity Serving Acreage</u>	<u>Acres</u>
Gage Canal	1,752
Alta Mesa Water Co.	65
East Riverside Water Co.	926
Riverside Highland Water Company	<u>1,173</u>
<u>TOTAL</u>	<u>3,916</u>

APPENDIX B.7

RPU Purchase agreement with Western MWD

Appendix B.7

AGREEMENT FOR SERVICE RIGHT IN THE WESTERN MUNICIPAL WATER DISTRICT STATE PROJECT WATER PIPELINE

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AGREEMENT FOR SERVICE RIGHT IN THE WESTERN
MUNICIPAL WATER DISTRICT STATE PROJECT WATER PIPELINE

THIS AGREEMENT made this 23rd day of September, 1986, is entered into by and between the WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY ("WMWD"), a municipal water district organized under the laws of the State of California and a member agency of the Metropolitan Water District of Southern California ("MWD") and of the Santa Ana Watershed Project Authority ("SAWPA"), and the CITY OF RIVERSIDE, a charter city ("CITY").

RECITALS

1. The Santa Ana Watershed Project Authority, a joint powers agency organized and existing pursuant to the laws of California and to a certain Joint Powers Agreement of January, 1975, exercising the powers common to its member agencies ("SAWPA"), has agreed to engineer, design, and construct an imported water conveyance system within the service area of WMWD, consisting of a gravity pipeline, a pressure pipeline, a reservoir and a pumping station ("PROJECT"), for the purpose of supplying treated water to WMWD's service area for irrigation, domestic and industrial uses. PROJECT Construction is presently estimated to be complete by 1990.

SAWPA has entered into a contract with the United States pursuant to the Small Reclamation Projects Act for a loan to construct the PROJECT entitled Contract Between the U.S. and Santa Ana Watershed Project Authority, dated February 11, 1985 and on file with SAWPA which is incorporated herein by reference. SAWPA has estimated the total project cost to be \$23,316,500. The loan, in an amount not to exceed \$14,917,000, has been approved and authorized for funding. The loan contract required the execution of a Lease-Purchase agreement between SAWPA and WMWD, which was executed on January 2, 1985 and is on file with the WMWD at its offices, which Agreement is incorporated herein by reference.

2. By the terms of the Lease-Purchase Agreement, WMWD will lease and operate the PROJECT from SAWPA during the period of time SAWPA is obligated under the loan contract with the United States, and will be solely responsible for all the financial obligations, costs and expenses of the PROJECT and the loan contract. At the time the loan obligation is repaid, SAWPA will convey its ownership interest in the PROJECT to WMWD.

3. WMWD, in turn, will make service rights in the PROJECT available to applicants within its service area, subject to certain payment requirements and terms and conditions.

4. CITY has applied for a service right of 30 cubic feet per second ("cfs"), and has agreed to pay the cost and to comply with the terms and conditions.

5. It is the purpose of this Agreement to provide the terms, conditions and payment schedule under which CITY will acquire a 30 cfs service right in the PROJECT.

COVENANTS

Based upon the foregoing facts, and in consideration of the mutual covenants of the parties, it is hereby agreed as follows:

6. Definitions. As used in this Agreement, these terms shall have the following meaning:

A. Service Right. A right to receive treated State Water Project water service at a specific maximum rate of flow of water at specific connections, to the extent water is available to WMWD from the Metropolitan Water District of Southern California ("MWD"), and to the extent the PROJECT facilities are capable of delivering design capacity flows. The amount of the service right shall be expressed in cubic feet per second as constant flow during a 24-hour period, and shall be equal to the maximum flow which may be required by CITY as measured at its connections on Reach A. Use of the pipeline by any project participant or participants shall not diminish CITY's service right.

B. PROJECT. The PROJECT is an imported water conveyance system intended to carry treated State Water Project water from the Henry J. Mills Filtration Plant ("Mills") on Alessandro Boulevard in western Riverside County to certain locations within the service area of WMWD. The conveyance system consists of two separate pipelines.

The first is a gravity pipeline, which begins at the Mills Filtration Plant and runs westerly approximately 65,000 feet, generally following the alignment of the Box Springs and Upper Feeder right of way belonging to MWD, to a final turnout at Eagle Valley. It includes a 10 million gallon storage facility located near the westerly end of the pipeline.

The second is a pressure pipeline, which will begin at the Mills Filtration Plant and run southerly approximately 18,300 feet, and includes a pumping station located near the Mills Filtration Plant.

C. PROJECT Participants. PROJECT Participants shall be those entities which obtain a service right in the PROJECT from WMWD and agree to abide by the terms and conditions set by WMWD for acquisition and utilization of such right.

D. Gravity Pipeline Reaches. The gravity pipeline shall consist of five reaches and a reservoir which are further defined as follows:

(1) Reach A. Reach A shall be the first reach of the gravity pipeline from the Mills Filtration Plant, running westerly approximately 31,200 feet, and consisting of a 60-inch pipeline.

(2) Reach B. Reach B shall be the second reach of the gravity pipeline from the Mills Plant, commencing at the westerly end of Reach A, running westerly approximately 14,600 feet, and consisting of a 54-inch pipeline.

(3) Reach C. Reach C shall be the third reach of the gravity pipeline, commencing at the westerly end of Reach B, running westerly approximately 3,200 feet, and consisting of a 48-inch pipeline.

(4) Reach D. Reach D shall be the fourth reach of the gravity pipeline, commencing at the end of Reach C, running westerly approximately 12,300 feet, consisting of a 48-inch pipeline.

(5) Reach E. Reach E shall be the fifth reach of the gravity pipeline, commencing at the western end of Reach D, running westerly 3,700 feet, consisting of a 36-inch pipeline, and terminating in Eagle Valley.

(6) Reservoir. Reservoir shall mean a 10 million gallon storage facility located along the gravity pipeline toward the westerly end. CITY shall have no storage rights in this facility.

A map generally showing the location and terminus of each Reach and the Reservoir of the PROJECT is attached hereto as Exhibit "A."

E. PROJECT Costs. PROJECT Costs are defined as all ordinary and usual costs relevant to creating the PROJECT for its stated purposes, including construction costs of the gravity pipeline, reservoir, pressure pipeline, pump station, design, engineering, legal and administrative costs, rights of way, Bureau of Reclamation participation, loan application reports, CEQA-EIR costs, field inspection, interest costs, escalation factors and contingencies.

7. CITY Service Right. CITY shall have the right to require and WMWD shall have the obligation to deliver at connections to be determined along or at the end of Reach A, 30 cfs of treated State Water Project water, dependent upon full payment of the purchase price therefor by CITY, and compliance with the terms and conditions set forth herein, and further dependent upon the availability of MWD water to WMWD, and the capability of the PROJECT to deliver water at its design capacity.

8. Price of Service Right. The total price of the 30 cfs service right is fixed at \$2,400,000 and is not subject to changed project requirements, cost overruns, or other increases or decreases in actual costs.

9. Payment Terms. CITY shall pay WMWD the total price of \$2,400,000 in one payment submitted no later than September 26, 1986.

10. Reach A Estimated Completion Date. SAWPA estimates completion of construction of Reach A by February 1, 1988, provided Bureau of Reclamation loan funds continue to be made available as presently expected and authorized. WMWD agrees to exercise its best efforts to cause SAWPA to use due diligence in completing construction of Reach A by February 1, 1988.

WMWD also agrees to use its best efforts to provide water service to CITY immediately after acceptance of Reach A, regardless of completion of subsequent reaches of the gravity pipeline.

11. Operation, Maintenance, Repair and Replacement Costs (Gravity Pipeline). Operation and maintenance costs which shall be those associated with the gravity section of the PROJECT shall be divided between fixed and variable costs.

A. Fixed Costs, which shall include an amount for replacement, shall be charged to PROJECT participants as an annual charge on a fiscal year basis, and divided among participants based on each participant's percent of allocated service rights, whether or not the participants take delivery of the flow. The fixed costs may also be divided among participants on a reach by reach basis.

Replacement shall mean replacement after destruction by acts of God, malicious mischief, vandalism, extraordinary major maintenance costs or similar events. If such

replacement becomes necessary when there are insufficient funds to cover the costs, WMWD shall meet with the PROJECT participants to determine how such costs shall be met.

B. Variable Costs shall be included in the rate for water, which shall be paid on a monthly basis. The water rate shall be the sum of the MWD rate for treated water, WMWD'S administrative charge, and variable costs of operation and maintenance of the gravity pipeline portion of the PROJECT. Payments shall be based on the net amount of water delivered to CITY'S connections on Reach A. The water rate shall apply to the quantity of water delivered at each connection and shall be billed monthly.

WMWD shall establish an independent cost center and an annual budget for the operation and maintenance of the gravity pipeline portion of the Project. CITY shall be provided the opportunity to review and comment upon the proposed budget prior to its adoption by WMWD's board. Operation and maintenance cost amounts for this portion of the Project shall be based on the annual budget.

12. Point of Delivery. CITY shall be entitled to take delivery of its 30 cfs of water at a connection or connections, not to exceed 3, at such location or locations on Reach A as shall be determined by the parties. The primary water source shall be California State Water Project water, treated and delivered to WMWD at the Mills Plant. CITY shall be responsible for the costs of whatever additional

facilities required to make a connection to the PROJECT, including a structure, valves, meter, and telemetry, although the actual design and construction of such connection facility shall be completed by WMWD. Such costs shall be paid to WMWD in advance of letting any contract for the work or the purchase of any necessary equipment or facilities. Once a connection has been made, the connection facilities and meter shall belong to WMWD, and WMWD shall be responsible for their operation, maintenance, repair and replacement.

The CITY will have the right to install, maintain and inspect its own telemetry equipment and connections within the metering facilities. WMWD shall provide electrical contacts and meter characteristics as approved by the CITY for CITY's telemetry equipment and a flanged connection for the CITY's pipeline. All CITY's telemetry equipment shall belong to the CITY and CITY shall be responsible for its operation, maintenance, repair and replacement. The CITY will demonstrate the capability of flow control for its service connections.

13. Operation and Administration.

A. Scheduled outages - WMWD will provide advance notice of any scheduled pipeline outage.

B. Connection Right of Way - WMWD will assist CITY in obtaining permanent and temporary construction easements from MWD for right of way needed to connect to the metering facilities.

C. Corrosion control - The pipeline will be bonded and test leads will be brought to the surface and WMWD will monitor potential for corrosion and provide corrosion control if necessary as part of the operation and maintenance.

D. Changes in flow - WMWD will permit instantaneous changes in flow at the CITY's connection provided WMWD is permitted by MWD to make instantaneous changes in flow from the Mills treated water reservoir.

14. Title to PROJECT. After all payments on the loan obligations are made, SAWPA will convey title of the PROJECT to WMWD which shall thenceforth be the sole owner and operator of the PROJECT and of capacity in the PROJECT. Notwithstanding any provisions of this Agreement, PROJECT participants shall have no ownership rights to PROJECT facilities or capacity. Further, no right created by this Agreement may be assigned, sold, leased, or transferred.

15. Reversion of Service Right. If CITY should determine it does not need its full 30 cfs service right, it may notify WMWD and request a reversion of the surplus to WMWD. If WMWD thereafter sells that right to another participant or new party, it shall reimburse CITY the amount of CITY'S purchase price for that portion, plus 8.64% interest annually from date of purchase. WMWD, however, is under no obligation to offer such reverted rights to a purchaser in advance of offering any other then-existing capacity.

16. Agreement Subject To Terms Of Prior Agreements.

This Agreement is subject to all the terms and conditions of the Lease Payment Agreement between SAWPA and WMWD dated January 2, 1985 and between SAWPA and the United States through the Loan Contract.

17. Default. Should CITY fail to perform its obligations under this Agreement with respect to payment for the service right, or with respect to the fixed and variable costs of operation, maintenance, repair or replacement, the following shall apply:

A. Default on Service Right. If CITY shall fail to make any payment due herein of the service right within ten (10) days from the date such payment is due, or if CITY shall fail to keep any of the terms and conditions of this Agreement concerning payment for the service right, then CITY shall be deemed to be in default hereunder. If CITY should, after notice, fail to remedy any such default with all reasonable dispatch, not to exceed thirty (30) days, then WMWD shall have the right, at its option, without any further demand or notice, to terminate this Agreement and to take possession of CITY's service right in the PROJECT and to declare CITY's right forfeited, and to thereafter hold or resell such right to other applicants without reimbursement to CITY.

With respect to the payment for the service right, this shall be the exclusive and only remedy for CITY's default should WMWD elect to pursue a remedy.

B. Default on Operation, Maintenance, Repair or Replacement Costs. If CITY shall fail to make any payment due herein within thirty (30) days from the invoice date, or if CITY shall fail to keep any of the terms and conditions of this contract concerning payment of operation, maintenance, repair or replacement costs, then CITY shall be deemed to be in default hereunder and WMWD shall have the right, at its option, without any further demand or notice, to terminate water service.

These rights are not intended to constitute WMWD's exclusive remedies, and they shall be in addition to any other right or remedy that WMWD may have for damages, termination of the Agreement, injunction, or other relief allowed by law.

18. Notices. Any notices or filings required to be given or made under this Agreement shall be served or made in the following manner:

A. Upon WMWD, by serving the Secretary or General Manager of WMWD personally or by registered mail addressed to the General Manager, Western Municipal Water District, 450 Alessandro Boulevard, Riverside, California 92508, P. O. Box 5286, Riverside, California 92517-5286.

B. Upon CITY, by serving the Public Utilities Director personally or by registered mail, Public Utilities Department, 3900 Main Street, Riverside, California 92522.

19. Severability. If any section or portion of this Agreement or the application thereof to any party is for any reason held invalid, it shall be deemed severable, and the validity of the remainder of the Agreement shall not be affected thereby.

20. Attorneys' Fees. Should either party hereto commence an action to enforce the provisions of this Agreement, then such party that prevails in that action shall be entitled to reasonable attorneys' fees, costs, expert witness fees, consulting fees and testing fees.

21. Amendments. This Agreement may be amended with the mutual consent of the parties, provided that such amendment shall be in writing, signed and dated by both parties hereto.

22. Hold Harmless. WMWD agrees to hold CITY harmless from any liability for damages or claims for personal injury and property damage which do not result from the negligent acts of CITY, its officials, officers, agents or employees, and CITY agrees to hold WMWD harmless from any liability for damages or claims for personal injury or property damage resulting from the negligence of CITY.

IN WITNESS WHEREOF, WMWD has caused this Agreement to be executed by the President of its Board of Directors and attested by the Secretary thereof, and CITY has executed this by its Mayor and attested by its CITY Clerk.

APPROVED AS TO FORM:

WESTERN MUNICIPAL WATER
FOR RIVERSIDE COUNTY

Anne J. Thomas
Attorney for Western
Municipal Water District
for Riverside County

By: Linda Hendrickson

ATTESTED BY:

[Signature]

CITY OF RIVERSIDE
a municipal corporation

By: [Signature] Mayor Pro Tempore

APPROVED AS TO FORM:

ATTESTED BY:

[Signature]
City Attorney
City of Riverside

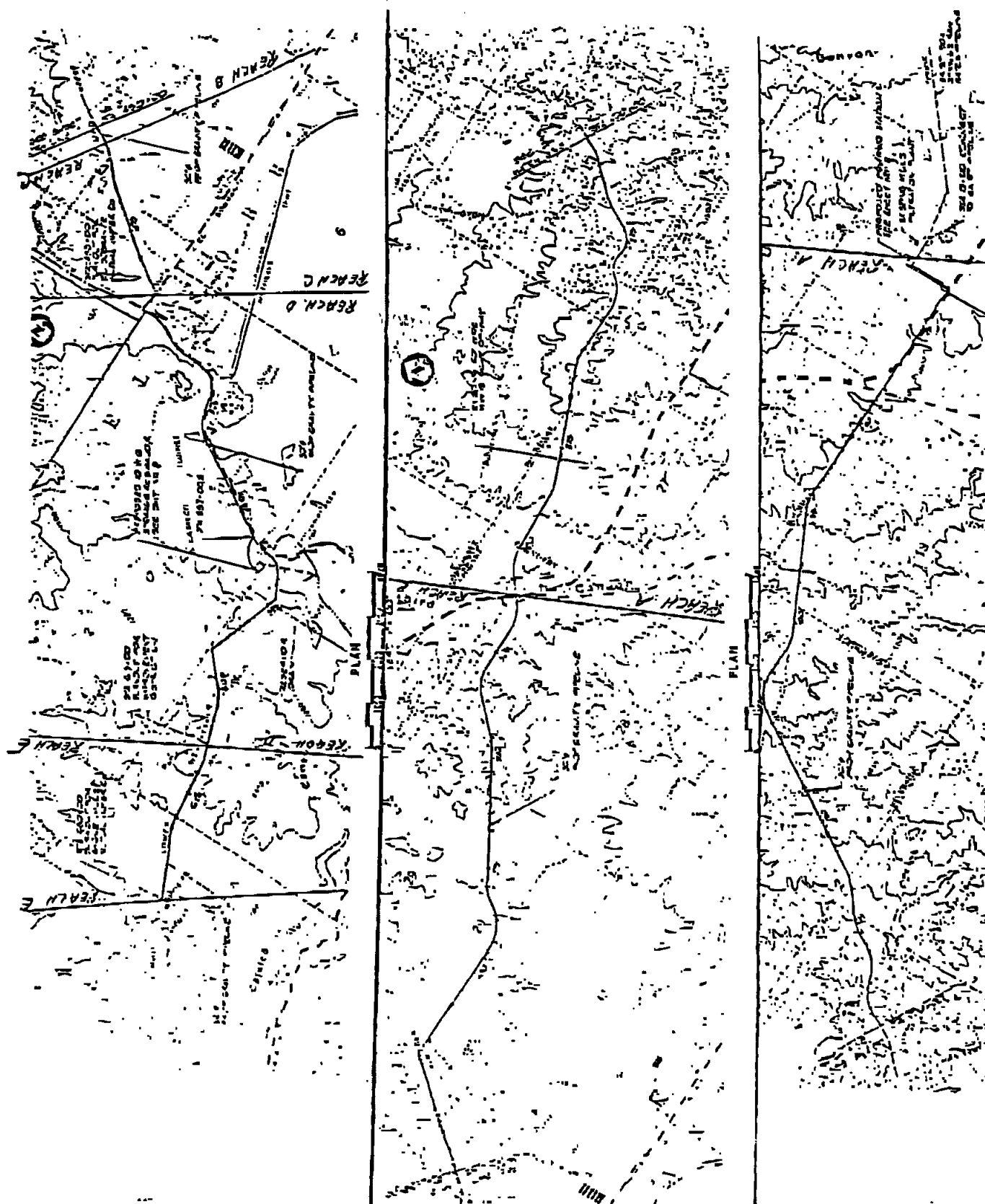
[Signature]
City Clerk

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EXHIBIT "A"

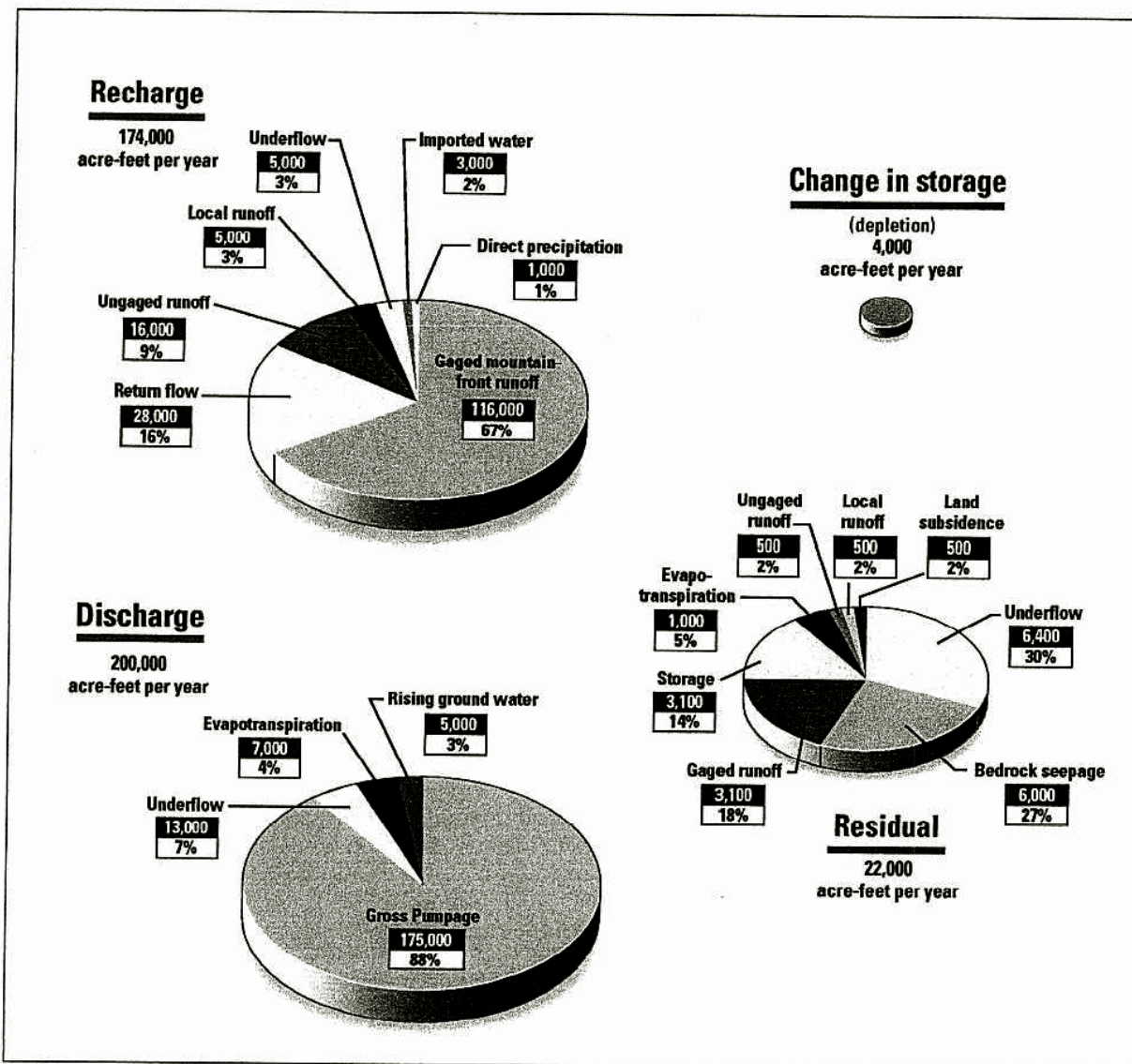


APPENDIX B.8

Mean Annual Recharge, Discharge Bunker Hill Basin (1945-1998)

Appendix B.8

Mean Annual Recharge, Discharge Bunker Hill Basin (1945-1998)



Source: Wes Danskin, Personal communications

APPENDIX B.9

Groundwater Budget for the San Bernardino Area (Bunker Hill) Basin (1945-1998)

Appendix B.9

Groundwater Budget for the San Bernardino Area (Bunker Hill) Basin (1945-1998)

Component	Minimum (AFY)	Average (AFY)	Maximum (AFY)
Recharge			
Direct Precipitation	0	1,000	12,000
Gaged runoff	27,000	116,000	423,000
Ungaged runoff	4,000	16,000	68,000
Direct recharge from local runoff	2,000	5,000	12,000
Imported water	0	3,000	30,000
Underflow	4,000	5,000	7,000
Return flow from pumpage	20,000	28,000	37,000
Total	57,000	174,000	589,000
Discharge			
Pumpage	123,000	175,000	215,000
Underflow	4,000	13,000	25,000
Evapotranspiration	1,000	7,000	26,000
Rising groundwater	0	5,000	42,000
Total	128,000	200,000	308,000
Change in storage	-143,000	-4,000	289,000
Residual	--	-22,000	--

Sources of Water to Compensate for residual

Component	Minimum (AFY)	Average (AFY)	Maximum (AFY)	Comment
Recharge from gaged runoff	0	4,000	5,500	Simulated values are 5,500 AFY greater than original estimate, which required many assumptions.
Recharge from ungaged runoff	0	500	500	Original estimate is highly uncertain.
Recharge from local runoff	0	500	500	Roundoff error of original estimate is 500 AFY.
Seepage from bedrock aquifer	0	6,000	15,000	Some underflow from bedrock is likely, and has been estimated using a heat-transport model to be as much as 15,000 AFY.
Change in storage, unconfined part of the valley-fill aquifer	0	3,000	7,500	Groundwater flow suggests a greater change in storage occurred.
Change in storage, confined part of the valley-fill aquifer	0	100	500	Original estimate for change in storage did not account for the confined aquifer.
Water related land subsidence	0	500	1,000	Some inelastic release of water from storage likely occurred, but the quantity is unknown.
Reduced evapotranspiration	0	1,000	2,000	Model may overestimate evapotranspiration.
Reduced underflow out of aquifer	0	6,400	6,400	Simulated value for underflow near Barrier J is 6,400 less than original estimate.
Total	--	22,000	--	

NOTES: -, indicates a decrease in groundwater storage; --, not applicable.

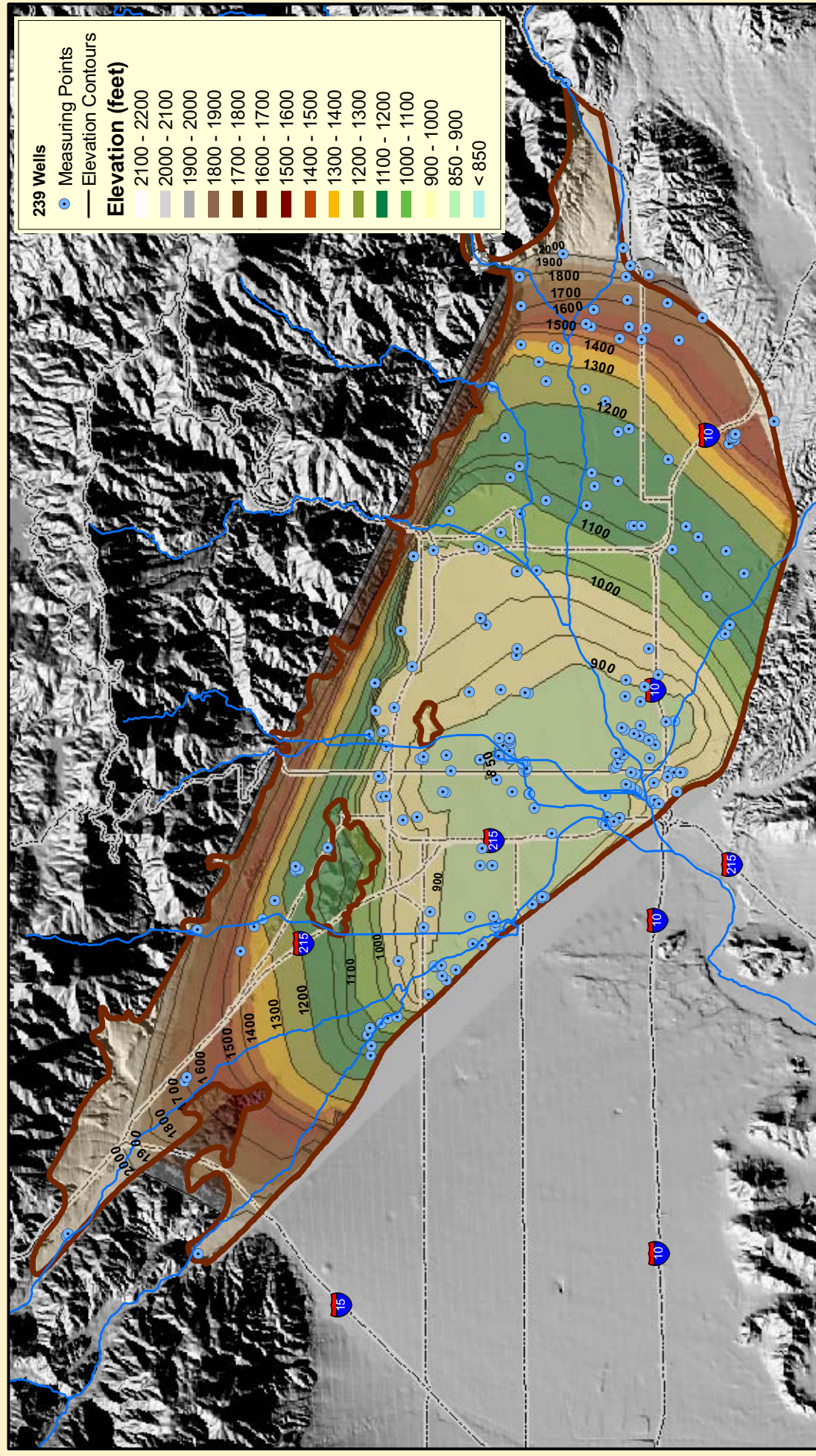
Average values are well researched from measured and estimated data; values to compensate for calculated residual are speculative

Source: Wes Danskin, USGS, San Diego; Personal communications

APPENDIX B.10

Conceptual Groundwater Contours in Bunker Hill 2004

Appendix B.10



San Gabriel Conservation District
OUR NAME IS OUR MOUNTAIN

Engineering Investigation
February 2005

Source: SBVWCD GIS

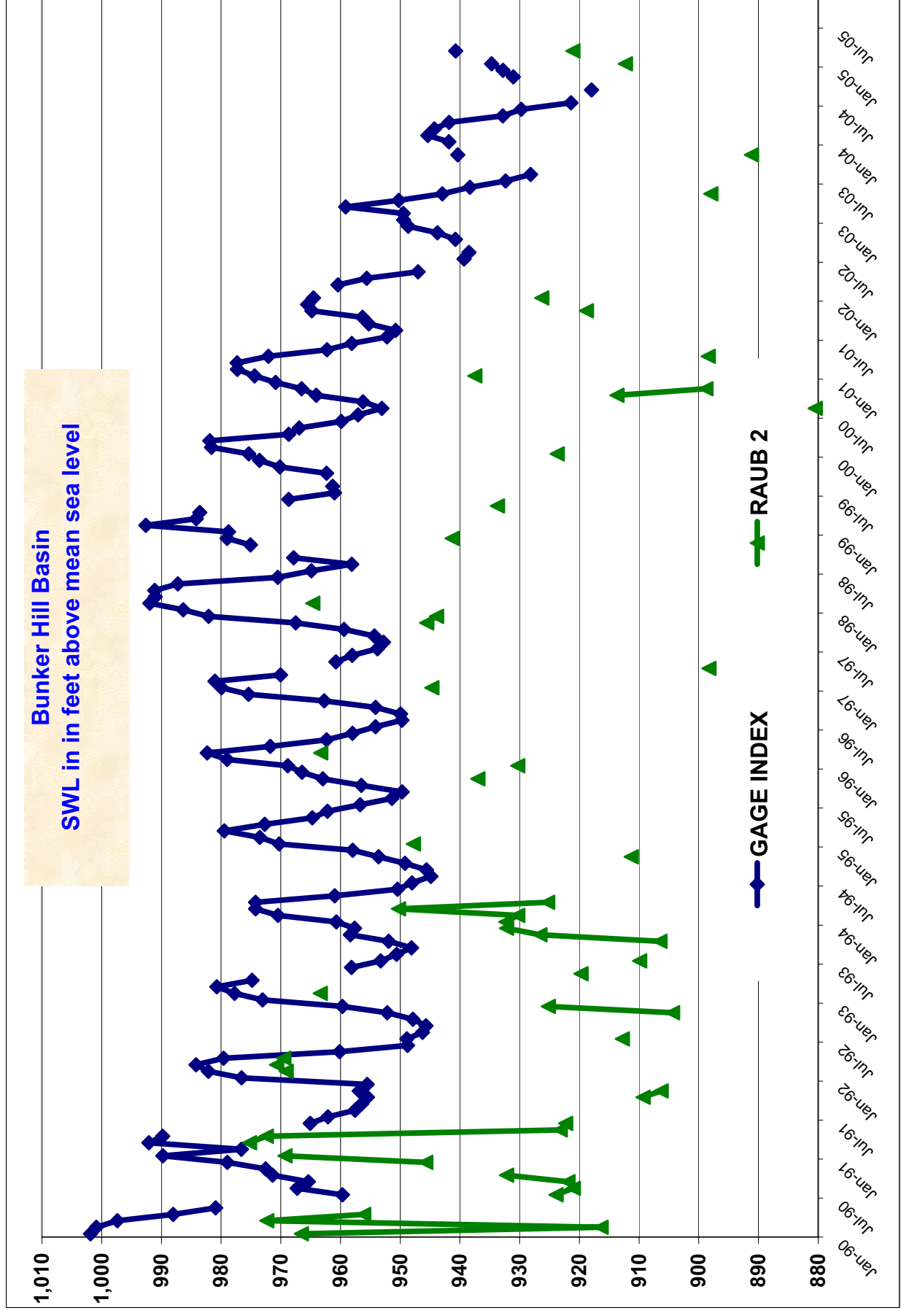
State Plane
NAD 83, Zone V, feet
30M DEM

Fall 2004 Conceptual Groundwater Contours

APPENDIX B.11

Static Groundwater level at some selected RPU wells in Bunker Hill

Appendix B.11



Gage index is average for wells 26-1, 29-2, 46-1, 51-1, and 66-1 with average reference elevation of 1,048 feet above mean sea level (amsl).
 Reference elevation for Raub 2 well is 1,017 ft amsl.

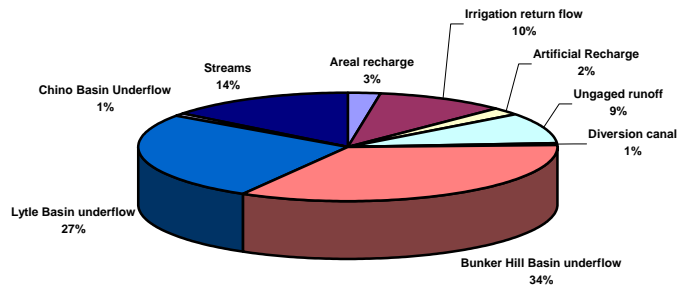
APPENDIX B.12

Components of recharge in the Colton-Rialto basin (1945-1996)

Appendix B.12

Components of recharge in the Colton-Rialto basin (1945-1996)

1945-96 Average Annual Recharge (33,620 AFY)

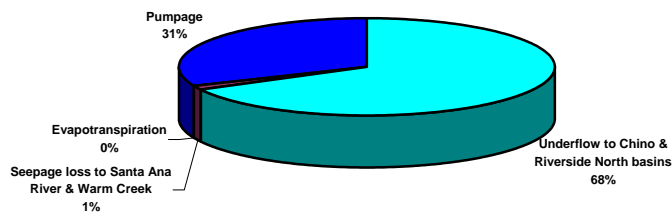


USGS Model simulated transient water budget for Colton-Rialto Basin (1945 - 96)

Source of Recharge	Acre-feet/yr	%
Areal recharge	860	3%
Irrigation return flow	3,320	10%
Artificial Recharge	750	2%
Ungaged runoff	3,070	9%
Diversion canal	190	1%
Bunker Hill Basin underflow	11,380	34%
Lytle Basin underflow	8,920	27%
Chino Basin Underflow	270	1%
Streams	4,860	14%
Total Recharge	33,620	100%
Water from storage	7,350	

Discharge	Acre-feet/yr	%
Underflow to Chino & Riverside North basins	23,700	67%
Seepage loss to Santa Ana River & Warm Creek	440	1%
Evapotranspiration	<<1	
Pumpage	11,080	31%
Total Discharge	35,220	100%
Water to storage	5,960	

1945-96 Average Annual Discharge (35,220 AFY)



Data Source: Woolfenden, L.R. and K.M. Kozcot, USGS (2001)

APPENDIX B.13

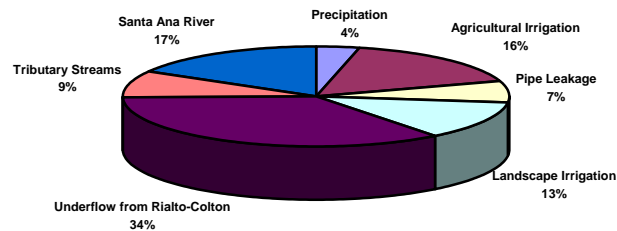
Estimated Groundwater Budget, Riverside-Arlington Basins (1976-2000)

Appendix B.13

Estimated Groundwater Budget, Riverside-Arlington Basins (1976-2000)

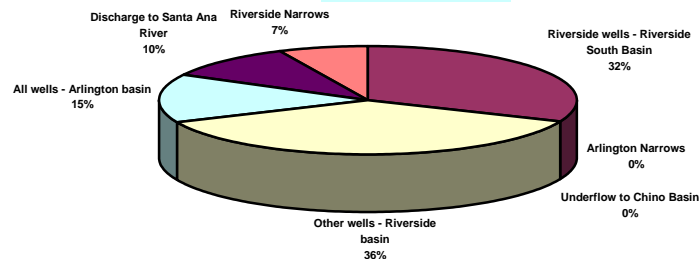
INFLOW	Acre-feet/year
Recharge from precipitation	2,100
Recharge from agricultural irrigation	9,300
Recharge from pipe leakage	4,000
Recharge from landscape irrigation	7,200
Underflow from Rialto-Colton	20,000
Recharge from tributary streams	5,000
Recharge from Santa Ana River	9,500
Sub-total	57,100
Underflow from Bunker Hill basin	4,500

Sources of Recharge



OUTFLOW	Acre-feet/year
Underflow to Chino Basin	-
Riverside wells - Riverside South Basin	18,000
Other wells - Riverside basin	21,000
All wells - Arlington basin	8,300
Discharge to Santa Ana River	5,800
Riverside Narrows	4,000
Arlington Narrows	-
Sub-total	57,100
All wells - Colton basin	4,600

Sources of Outflow

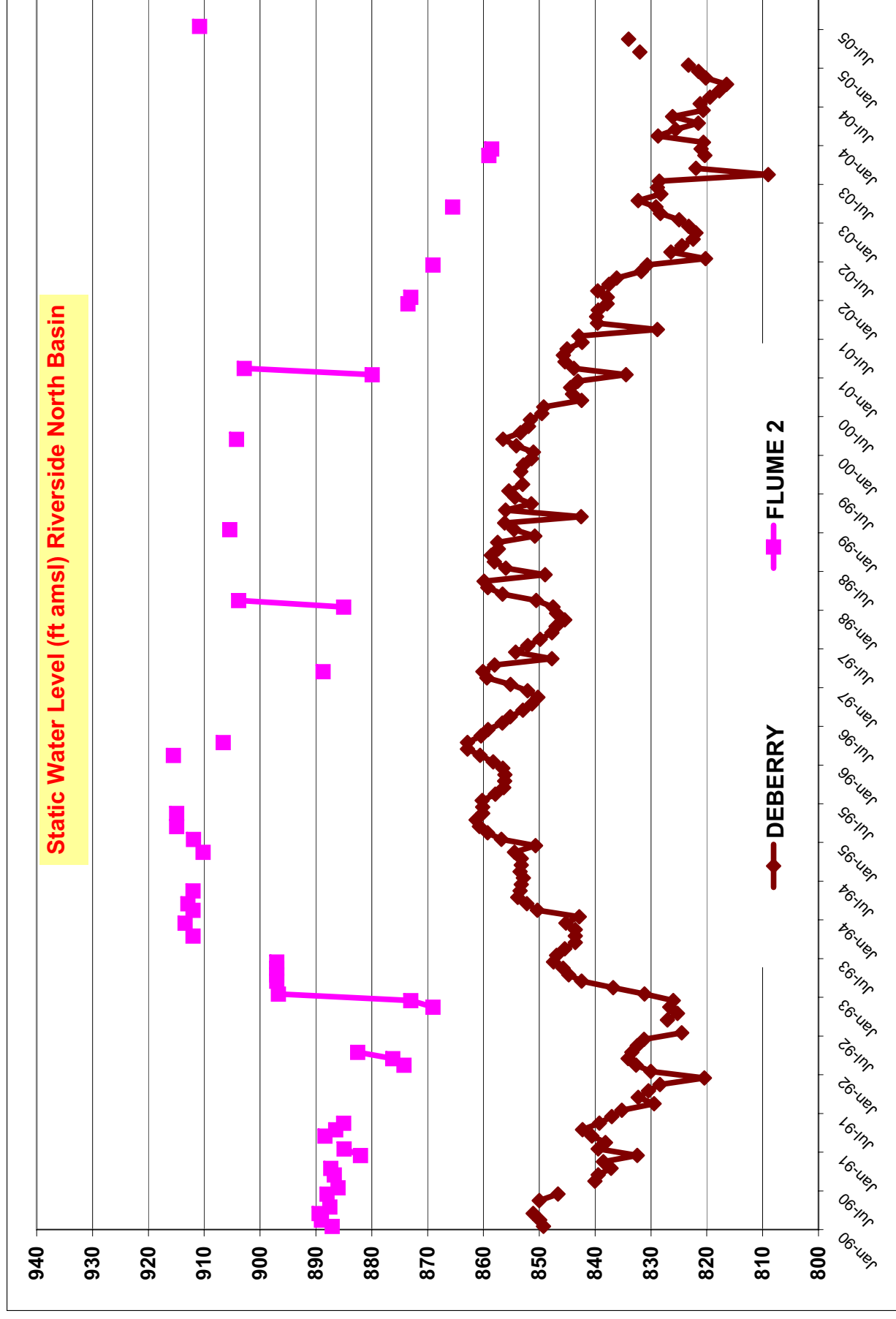


Data source: GeoTrans. 2003. Riverside Groundwater Basin Study Report Project Agreement 16 - Phase 2.

APPENDIX B.14

Average monthly static water level (ft amsl)
of selected RPU wells in Riverside North Groundwater Basin

Appendix B.14



Reference elevations are 976 feet amsl and 932 feet amsl for Deberry and Flume well respectively.

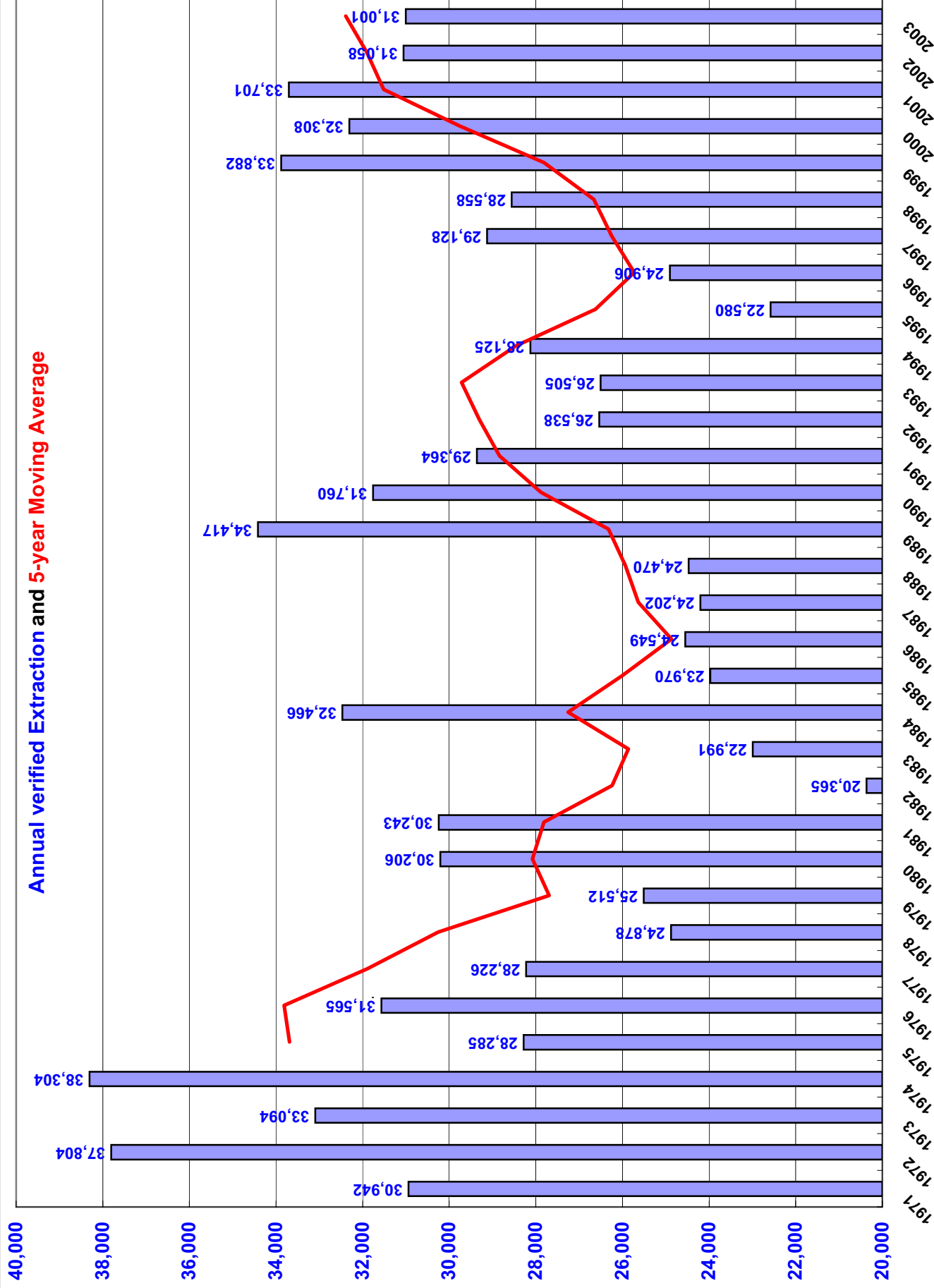
APPENDIX B.15

Annual Production from Riverside South Groundwater Basin

Appendix B.15

Annual Production (acre-feet) from Riverside South Groundwater Basin.

Annual verified Extraction and 5-year Moving Average



Data Source: Western-Muni Watermaster Report August 2005

APPENDIX B.16

Average monthly static water level (ft amsl)

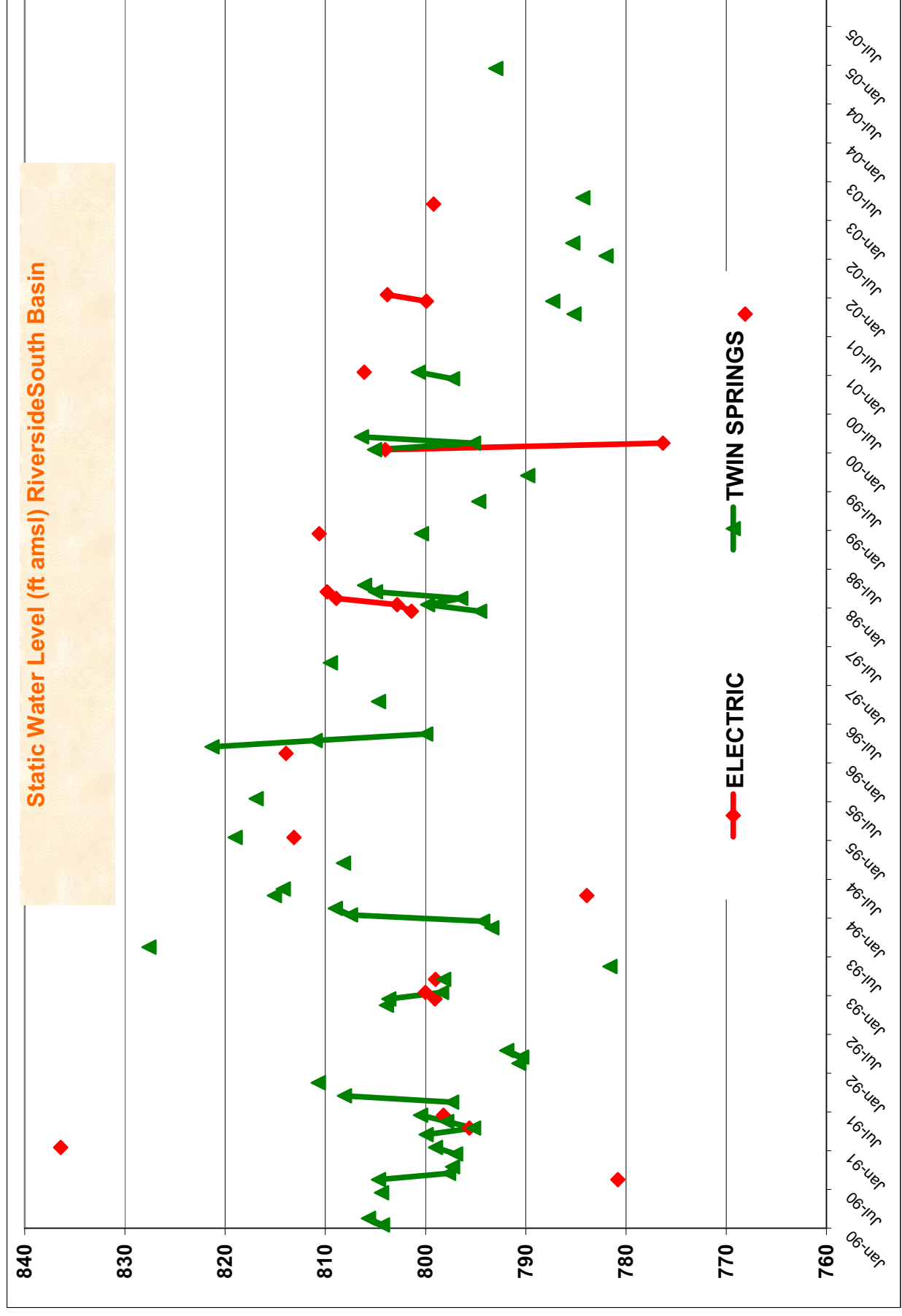
of

selected RPU wells

in

Riverside South Groundwater Basin

Appendix B.16



Reference elevations are 883 feet amsl and 836 feet amsl for Electric and Twin Springs wells respectively

APPENDIX C.1

CUWCC Report for 2004

Appendix C.1

Reported as of 5/2/

Water Supply & Reuse

Reporting Unit:

Year:

2004

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
--------------------	------------------------	-------------

Total AF:

Reported as of 5/21

Accounts & Water Use

Reporting Unit Name:
**City of Riverside, Public
 Utilities**

Submitted to
**CUWCC
 01/04/2005**

Year:
2004

A. Service Area Population Information:

1. Total service area population 274071

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	56254	437	0	0
2. Multi-Family	0	0	0	0
3. Commercial	4932	229	0	0
4. Industrial	482	31	0	0
5. Institutional	0	0	0	0
6. Dedicated Irrigation	0	0	0	0
7. Recycled Water	0	0	0	0
8. Other	0	0	0	0
9. Unaccounted	NA	0	NA	0
Total	61668	697	0	0

Metered**Unmetered**

Reported as of 5/2/

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
**City of Riverside, Public
 Utilities**

BMP Form
 Status:
100% Complete

Year:
2004

A. Implementation

1. Based on your signed MOU date, 12/19/1991, your Agency STRATEGY DUE DATE is: 12/18/1993
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys? yes
 - a. If YES, when was it implemented? 7/1/1989
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys? yes
 - a. If YES, when was it implemented? 7/1/1989

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi- Family Units
1. Number of surveys offered:	17989	0
2. Number of surveys completed:	17989	0

Indoor Survey:

- | | | |
|---|-----|-----|
| 3. Check for leaks, including toilets, faucets and meter checks | yes | yes |
| 4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary | yes | yes |
| 5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as necessary; replace leaking toilet flapper, as necessary | yes | yes |

Outdoor Survey:

- | | | |
|---|-----|-----|
| 6. Check irrigation system and timers | yes | yes |
| 7. Review or develop customer irrigation schedule | yes | yes |
| 8. Measure landscaped area (Recommended but not required for surveys) | yes | yes |

- | | | |
|--|-----|-----------------|
| 9. Measure total irrigable area
(Recommended but not required for surveys) | yes | yes |
| 10. Which measurement method is typically used (Recommended but not required for surveys) | | Pacing |
| 11. Were customers provided with information packets that included evaluation results and water savings recommendations? | yes | yes |
| 12. Have the number of surveys offered and completed, survey results, and survey costs been tracked? | yes | yes |
| a. If yes, in what form are surveys tracked? | | manual activity |
| b. Describe how your agency tracks this information. | | |

Database and manually

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	10000	10000
2. Actual Expenditures	10000	

D. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | No |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

E. Comments

Reported as of 5/2/

BMP 02: Residential Plumbing Retrofit

Reporting Unit:

**City of Riverside, Public
Utilities**

BMP Form Status:

100% Complete

Year:

2004**A. Implementation**

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? no

a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? yes

3. Estimated percent of single-family households with low-flow showerheads: 83%

4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? yes

5. Estimated percent of multi-family households with low-flow showerheads: 83%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

Direct installation program results tallied to previous years total.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? yes

a. If YES, when did your agency begin implementing this strategy? 01/01/1981

b. Describe your targeting/ marketing strategy.

Devices are installed as part of the weatherization program offered to Senior citizens , handicapped, and low income residents.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	225	0
3. Number of toilet-displacement devices distributed:	0	0

- | | | |
|--|---|----------|
| 4. Number of toilet flappers distributed: | 0 | 0 |
| 5. Number of faucet aerators distributed: | 0 | 0 |
| 6. Does your agency track the distribution and cost of low-flow devices? | | yes |
| a. If YES, in what format are low-flow devices tracked? | | Database |
| b. If yes, describe your tracking and distribution system : | | |

Information is entered into database.

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	25000	25000
2. Actual Expenditures	25000	

D. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | No |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

E. Comments

Reported as of 5/2/

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:

City of Riverside, Public Utilities

BMP Form Status:

100% Complete

Year:

2004

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year? no
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:
 - a. Determine metered sales (AF) 61186
 - b. Determine other system verifiable uses (AF) 482
 - c. Determine total supply into the system (AF) 61668
 - d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. 1.00
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? yes
4. Did your agency complete a full-scale audit during this report year? no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? yes
6. Does your agency operate a system leak detection program? no
 - a. If yes, describe the leak detection program:

B. Survey Data

1. Total number of miles of distribution system line. 938
2. Number of miles of distribution system line surveyed. 0

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as No

effective as" variant of this BMP?

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

n/a

Reported as of 5/21

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:

City of Riverside, Public Utilities

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use? yes

2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use? no

a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?

b. Describe the program:

All connections are metered.

3. Number of previously unmetered accounts fitted with meters during report year. 0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? no

a. If YES, when was the feasibility study conducted? (mm/dd/yy)

b. Describe the feasibility study:

2. Number of CII accounts with mixed-use meters. 0

3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period. 0

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be

"at least as effective as."

E. Comments

Reported as of 5/21

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:

**City of Riverside,
Public Utilities**

BMP Form Status:

100% Complete

Year:

2004

A. Water Use Budgets

- | | |
|--|-----|
| 1. Number of Dedicated Irrigation Meter Accounts: | 358 |
| 2. Number of Dedicated Irrigation Meter Accounts with Water Budgets: | 0 |
| 3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 5. Does your agency provide water use notices to accounts with budgets each billing cycle? | no |

B. Landscape Surveys

- | | |
|--|----------|
| 1. Has your agency developed a marketing / targeting strategy for landscape surveys? | yes |
| a. If YES, when did your agency begin implementing this strategy? | 7/1/1992 |
| b. Description of marketing / targeting strategy: | |
| RPU contracts with a local agency to perform landscape surveys. | |
| 2. Number of Surveys Offered. | 2 |
| 3. Number of Surveys Completed. | 2 |
| 4. Indicate which of the following Landscape Elements are part of your survey: | |
| a. Irrigation System Check | yes |
| b. Distribution Uniformity Analysis | yes |
| c. Review / Develop Irrigation Schedules | yes |
| d. Measure Landscape Area | yes |
| e. Measure Total Irrigable Area | yes |
| f. Provide Customer Report / Information | yes |
| 5. Do you track survey offers and results? | yes |
| 6. Does your agency provide follow-up surveys for previously completed surveys? | no |
| a. If YES, describe below: | |

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. no
Does your agency provide mixed-use accounts with landscape budgets?

2. Number of CII mixed-use accounts with landscape budgets. 0

3. Do you offer landscape irrigation training? yes

4. Does your agency offer financial incentives to improve landscape water use efficiency? no

Type of Financial Incentive:	Budget (Dollars/Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services? yes

a. If YES, describe below:

Customers are given information on request.

6. Do you have irrigated landscaping at your facilities? yes

a. If yes, is it water-efficient? yes

b. If yes, does it have dedicated irrigation metering? yes

7. Do you provide customer notices at the start of the irrigation season? yes

8. Do you provide customer notices at the end of the irrigation season? no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	2500	2500
2. Actual Expenditures	2500	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

Reported as of 5/2/

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:

City of Riverside, Public Utilities

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers? yes

a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.

City of Riverside offers the HECW rebate program as a member agency of Western Metropolitan Water District.

2. Does your agency offer rebates for high-efficiency washers? yes

3. What is the level of the rebate? 100

4. Number of rebates awarded. 594

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	100000	100000
2. Actual Expenditures	59400	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

This rebate program is included with the Energy Star program.

Reported as of 5/2/

BMP 07: Public Information Programs

Reporting Unit:

**City of Riverside, Public
Utilities**

BMP Form Status:

100% Complete

Year:

2004**A. Implementation**

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

Water conservation materials are distributed at events, schools and to customers upon request.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	24
b. Public Service Announcement	yes	7
c. Bill Inserts / Newsletters / Brochures	yes	4
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	1
f. Special Events, Media Events	yes	23
g. Speaker's Bureau	no	0
h. Program to coordinate with other government agencies, industry and public interest groups and media	no	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	175000	175000
2. Actual Expenditures	103091	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Funding is inclusive with Public Benefits funding.

Reported as of 5/2/

BMP 08: School Education Programs

Reporting Unit:

**City of Riverside, Public
Utilities**BMP Form Status:
100% CompleteYear:
2004**A. Implementation**

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	3	1415	1
Grades 4th-6th	no	0	0	0
Grades 7th-8th	yes	1	70	0
High School	no	0	0	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 7/1/1989

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	2500	2500
2. Actual Expenditures	2500	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

n/a

Reported as of 5/2/

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:
**City of Riverside,
Public Utilities**

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use? yes
2. Has your agency identified and ranked INDUSTRIAL customers according to use? yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use? yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option? yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	2	0	0
b. Number of New Surveys Completed	2	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0
CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	yes	yes	yes
f. Evaluation of all water-using apparatus and processes	yes	yes	yes
g. Customer report identifying	yes	yes	yes

recommended
efficiency measures,
paybacks and
agency incentives

Agency CII Customer Incentives	Budget (\$/Year)	No. Awarded to Customers	Total \$ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	800
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	12500	12500
2. Actual Expenditures	12500	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 5/21

BMP 09a: CII ULFT Water Savings

Reporting Unit:

**City of Riverside, Public
Utilities**

BMP Form Status:

100% Complete

Year:

2004

1. Did your agency implement a CII ULFT replacement program in the reporting year? No
 If No, please explain why on Line B.
 10.

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply. Potential savings
 a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

n/a

2. How does your agency advertise this program? Other print media
 Check all that apply.

- a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

RPU Account Managers conduct in-person business visits as part of the overall visitation plan.

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.) no
 2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency? No
 3. What is the total number of customer accounts participating in the program during the last year ?

**CII
Subsector**

Number of Toilets Replaced

- | 4. | Standard
Gravity
Tank | Air
Assisted | Valve Floor
Mount | Valve Wall
Mount |
|--|--------------------------------------|-------------------------|------------------------------|-----------------------------|
| a. Offices | | | | |
| b. Retail /
Wholesale | | | | |
| c. Hotels | | | | |
| d. Health | | | | |
| e. Industrial | | | | |
| f. Schools:
K to 12 | | | | |
| g. Eating | | | | |
| h. Govern-
ment | | | | |
| i. Churches | | | | |
| j. Other | | | | |
| 5. Program design. | | | | |
| | | | | Rebate or voucher |
| 6. Does your agency use outside services to implement this program? | | | | |
| | | | | No |
| a. If yes, check all that apply. | | | | |
| 7. Participant tracking and follow-up. | | | | |
| | | | | No follow-up |
| 8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program. | | | | |
| a. Disruption to business | | | | 1 |
| b. Inadequate payback | | | | 1 |
| c. Inadequate ULFT performance | | | | 1 |
| d. Lack of funding | | | | 5 |
| e. American's with Disabilities Act | | | | 1 |
| f. Permitting | | | | 1 |
| g. Other. Please describe in B. 9. | | | | 1 |
| 9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other issues affecting program implementation or effectiveness. | | | | |
| n/a | | | | |
| 10. Please provide a general assessment of the program for this | | | | |

reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

Riverside refers CII ULFT rebate inquiries directly to Western Municipal Water District.

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	0
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	0

D. Comments

Due to lack of funding, RPU did not implement a CII program this FY.

Reported as of 5/21

BMP 11: Conservation Pricing

Reporting Unit:

City of Riverside, Public Utilities

BMP Form

Status:

100%**Complete**

Year:

2004**A. Implementation****Rate Structure Data Volumetric Rates for Water Service by Customer Class****1. Residential**

a. Water Rate Structure	Increasing Block Seasonal
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	\$19921000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

2. Commercial

a. Water Rate Structure	Increasing Block Seasonal
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	\$9182000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

3. Industrial

a. Water Rate Structure	Increasing Block Seasonal
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	\$1380000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

4. Institutional / Government

a. Water Rate Structure	Increasing Block Seasonal
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	\$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

5. Irrigation

a. Water Rate Structure	Service Not Provided
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

6. Other

a. Water Rate Structure	Service Not Provided
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 5/21

BMP 12: Conservation Coordinator

Reporting Unit:

**City of Riverside, Public
Utilities**

BMP Form Status:

100% Complete

Year:

2004**A. Implementation**

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ? no
4. Partner agency's name: Western Municipal
Water District
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 5%
 - b. Coordinator's Name Michele Kovach
 - c. Coordinator's Title Sr. Account Manager
 - d. Coordinator's Experience and Number of Years 14
 - e. Date Coordinator's position was created (mm/dd/yyyy) 10/31/1995
6. Number of conservation staff, including Conservation Coordinator. 2

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	25000	25000
2. Actual Expenditures	25000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 5/21

BMP 13: Water Waste Prohibition

Reporting Unit:

**City of Riverside, Public
Utilities**

BMP Form Status:

100% Complete

Year:

2004**A. Requirements for Documenting BMP Implementation**

1. Is a water waste prohibition ordinance in effect in your service area? yes

a. If YES, describe the ordinance:

Ordinance on file

2. Is a copy of the most current ordinance(s) on file with CUWCC? yes

a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

on file

on file

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

a. Gutter flooding yes

b. Single-pass cooling systems for new connections yes

c. Non-recirculating systems in all new conveyor or car wash systems no

d. Non-recirculating systems in all new commercial laundry systems no

e. Non-recirculating systems in all new decorative fountains yes

f. Other, please name no

2. Describe measures that prohibit water uses listed above:

Listed in Ordinance

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

a. Allow the sale of more efficient, demand-initiated regenerating DIR models. yes

b. Develop minimum appliance efficiency standards that:

i.) Increase the regeneration efficiency

standard to at least 3,350 grains of hardness removed per pound of common salt used. yes

ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. yes

c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. yes

4. Does your agency include water softener checks in home water audit programs? no

5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? yes

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	187500	187500
2. Actual Expenditures	187500	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 5/21

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:

City of Riverside, Public Utilities

BMP Form Status:
100% CompleteYear:
2004

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Number of Toilets Replaced by Agency Program During Report Year		
Replacement Method	SF Accounts	MF Units
2. Rebate	1306	0
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
Total	1306	0

6. Describe your agency's ULFT program for single-family residences.

Rebate program offered

7. Describe your agency's ULFT program for multi-family residences.

Rebate program offered

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	150000	150000
2. Actual Expenditures	150000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

APPENDIX C.2

CUWCC Report for 2001

Appendix C.2

Reported as of 5/21

Water Supply & Reuse

Reporting Unit:

Year:

2001

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
--------------------	------------------------	-------------

Total AF:

Reported as of 5/2/

Accounts & Water Use

Reporting Unit Name:
**City of Riverside, Public
 Utilities**

Submitted to
**CUWCC
 12/16/2002**

Year:
2001

A. Service Area Population Information:

1. Total service area population 262335

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	54200	402.17	0	0
2. Multi-Family	0	0	0	0
3. Commercial	4365	219.8	0	0
4. Industrial	0	0	0	0
5. Institutional	341	.008	0	0
6. Dedicated Irrigation	0	0	0	0
7. Recycled Water	0	0	0	0
8. Other	0	0	0	0
9. Unaccounted	NA	0	NA	0
Total	58906	621.978	0	0
	Metered		Unmetered	

Reported as of 5/2/

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
**City of Riverside, Public
 Utilities**

BMP Form
 Status:
100% Complete

Year:
2001

A. Implementation

1. Based on your signed MOU date, 12/19/1991, your Agency STRATEGY DUE DATE is: 12/18/1993
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys? yes
 - a. If YES, when was it implemented? 7/1/1989
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys? yes
 - a. If YES, when was it implemented? 7/1/1989

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi- Family Units
1. Number of surveys offered:	17500	1400
2. Number of surveys completed:	17500	1400

Indoor Survey:

- | | | |
|---|-----|-----|
| 3. Check for leaks, including toilets, faucets and meter checks | yes | yes |
| 4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary | yes | yes |
| 5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as necessary; replace leaking toilet flapper, as necessary | yes | yes |

Outdoor Survey:

- | | | |
|---|-----|-----|
| 6. Check irrigation system and timers | yes | yes |
| 7. Review or develop customer irrigation schedule | yes | yes |
| 8. Measure landscaped area (Recommended but not required for surveys) | yes | yes |

9. Measure total irrigable area (Recommended but not required for surveys)	yes	yes
10. Which measurement method is typically used (Recommended but not required for surveys)		Pacing
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	yes	yes
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	yes	yes
a. If yes, in what form are surveys tracked?		manual activity
b. Describe how your agency tracks this information.		
		Database / manual tracking

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	25000	25000
2. Actual Expenditures	25000	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

E. Comments

Reported as of 5/2/

BMP 02: Residential Plumbing Retrofit

Reporting Unit:

**City of Riverside, Public
Utilities**BMP Form Status:
100% CompleteYear:
2001**A. Implementation**

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? no

a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? yes

3. Estimated percent of single-family households with low-flow showerheads: 81%

4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? yes

5. Estimated percent of multi-family households with low-flow showerheads: 82%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

Direct installation program results tallied to previous years total.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? no

a. If YES, when did your agency begin implementing this strategy?

b. Describe your targeting/ marketing strategy.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	24500	2200
3. Number of toilet-displacement devices distributed:	225	123
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators	0	0

distributed:

6. Does your agency track the distribution and cost of low-flow devices? yes

a. If YES, in what format are low-flow devices tracked? Database

b. If yes, describe your tracking and distribution system :

Input in database

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	25000	25000
2. Actual Expenditures	27719	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 5/21

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:

City of Riverside, Public Utilities

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year? no
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:
 - a. Determine metered sales (AF) 74647
 - b. Determine other system verifiable uses (AF) 498
 - c. Determine total supply into the system (AF) 75145
 - d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. 1.00
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? yes
4. Did your agency complete a full-scale audit during this report year? no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? no
6. Does your agency operate a system leak detection program? no
 - a. If yes, describe the leak detection program:

B. Survey Data

1. Total number of miles of distribution system line. 902
2. Number of miles of distribution system line surveyed. 0

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as No

effective as" variant of this BMP?

- a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 5/2/

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:

City of Riverside, Public Utilities

BMP Form Status:

100% Complete

Year:

2001

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use? yes
2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use? no
 - a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?
 - b. Describe the program:
3. Number of previously unmetered accounts fitted with meters during report year. 0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? no
 - a. If YES, when was the feasibility study conducted? (mm/dd/yy)
 - b. Describe the feasibility study:
2. Number of CII accounts with mixed-use meters. 4356
3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period. 0

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 5/2/

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:

**City of Riverside,
Public Utilities**

BMP Form Status:

100% Complete

Year:

2001

A. Water Use Budgets

- | | |
|--|-----|
| 1. Number of Dedicated Irrigation Meter Accounts: | 358 |
| 2. Number of Dedicated Irrigation Meter Accounts with Water Budgets: | 0 |
| 3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 5. Does your agency provide water use notices to accounts with budgets each billing cycle? | no |

B. Landscape Surveys

- | | |
|--|----------|
| 1. Has your agency developed a marketing / targeting strategy for landscape surveys? | yes |
| a. If YES, when did your agency begin implementing this strategy? | 7/1/1992 |
| b. Description of marketing / targeting strategy: | |
| Contracted with RCRCDD to perform surveys and audits for large landscapes. | |
| 2. Number of Surveys Offered. | 182 |
| 3. Number of Surveys Completed. | 182 |
| 4. Indicate which of the following Landscape Elements are part of your survey: | |
| a. Irrigation System Check | yes |
| b. Distribution Uniformity Analysis | yes |
| c. Review / Develop Irrigation Schedules | yes |
| d. Measure Landscape Area | yes |
| e. Measure Total Irrigable Area | yes |
| f. Provide Customer Report / Information | yes |
| 5. Do you track survey offers and results? | yes |
| 6. Does your agency provide follow-up surveys for previously completed surveys? | no |
| a. If YES, describe below: | |

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. no

Does your agency provide mixed-use accounts with landscape budgets?

2. Number of CII mixed-use accounts with landscape budgets. 0

3. Do you offer landscape irrigation training? yes

4. Does your agency offer financial incentives to improve landscape water use efficiency? no

Type of Financial Incentive:	Budget (Dollars/Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services? yes

a. If YES, describe below:

Upon customer request - Information provided by water staff.

6. Do you have irrigated landscaping at your facilities? yes

a. If yes, is it water-efficient? yes

b. If yes, does it have dedicated irrigation metering? yes

7. Do you provide customer notices at the start of the irrigation season? no

8. Do you provide customer notices at the end of the irrigation season? no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	12500	12500
2. Actual Expenditures	12500	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

Reported as of 5/21

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:

City of Riverside, Public Utilities

BMP Form Status:

100% Complete

Year:

2001

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers? yes

a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.

Through the Energy Star rebate program, \$100 rebates are given on Energy Star rated washing machines.

2. Does your agency offer rebates for high-efficiency washers? yes

3. What is the level of the rebate? 100

4. Number of rebates awarded. 302

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	50000	50000
2. Actual Expenditures	30200	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The budget for this program was included in the Energy Star rebate program.

Reported as of 5/2/

BMP 07: Public Information Programs

Reporting Unit:

**City of Riverside, Public
Utilities**

BMP Form Status:

100% Complete

Year:

2001**A. Implementation**

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

Water conservation materials are distributed at events, schools and to the customer upon request.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	2
b. Public Service Announcement	no	
c. Bill Inserts / Newsletters / Brochures	yes	3
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	3
g. Speaker's Bureau	yes	2
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	175000	175000
2. Actual Expenditures	175000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The budget encompasses electric and water water conservation advertising.

Reported as of 5/21

BMP 08: School Education Programs

Reporting Unit:

**City of Riverside, Public
Utilities**BMP Form Status:
100% CompleteYear:
2001**A. Implementation**

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	3	5000	1
Grades 4th-6th	yes	3	5000	1
Grades 7th-8th	yes	3	5000	1
High School	yes	3	5000	1

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 7/1/1989

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	100000	100000
2. Actual Expenditures	89000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 5/21

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:

**City of Riverside,
Public Utilities**

BMP Form Status:

100% Complete

Year:

2001

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use? yes
2. Has your agency identified and ranked INDUSTRIAL customers according to use? yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use? yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option? yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	4183	366	88
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0
CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	yes	no	yes
f. Evaluation of all water-using apparatus and processes	no	no	no
g. Customer report identifying	no	no	no

recommended
efficiency measures,
paybacks and
agency incentives

Agency CII Customer Incentives	Budget (\$/Year)	No. Awarded to Customers	Total \$ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	675.3
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	12500	12500
2. Actual Expenditures	12500	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 5/21

BMP 09a: CII ULFT Water Savings

Reporting Unit:

**City of Riverside, Public
Utilities**BMP Form Status:
100% CompleteYear:
2001

1. Did your agency implement a CII ULFT replacement program in the reporting year? No
 If No, please explain why on Line B.10.

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply. Potential savings

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

na

2. How does your agency advertise this program? Other print media
 Check all that apply.

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

na

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.) no
2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency? No
3. What is the total number of customer accounts participating in the program during the last year ?

**CII
Subsector**

Number of Toilets Replaced

4. **Standard Air Valve Floor Valve Wall**

	Gravity Tank	Assisted	Mount	Mount
a. Offices	0	0	0	0
b. Retail / Wholesale	0	0	0	0
c. Hotels	0	0	0	0
d. Health	0	0	0	0
e. Industrial	0	0	0	0
f. Schools: K to 12	0	0	0	0
g. Eating	0	0	0	0
h. Govern- ment	0	0	0	0
i. Churches	0	0	0	0
j. Other	0	0	0	0

5. Program
design.

6. Does your agency use outside services to
implement this program? No

a. If yes, check all that
apply.

7. Participant tracking and
follow-up. No follow-up

8. Based on your program experience, please rank on a scale of 1
to 5, with 1 being the least frequent cause and 5 being the most
frequent cause, the following reasons why customers refused to
participate in the program.

a. Disruption to business	1
b. Inadequate payback	1
c. Inadequate ULFT performance	1
d. Lack of funding	5
e. American's with Disabilities Act	1
f. Permitting	1
g. Other. Please describe in B. 9.	1

9. Please describe general program acceptance/resistance by
customers, obstacles to implementation, and other issues affecting
program implementation or effectiveness.

na

10. Please provide a general assessment of the program for this
reporting year. Did your program achieve its objectives? Were

your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

na

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	0
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	0

D. Comments

Due to lack of funding, RPU was unable to implement a program this FY.

Reported as of 5/2/

BMP 11: Conservation Pricing

Reporting Unit:

City of Riverside, Public Utilities

BMP Form

Status:

100%

Year:

2001**Complete****A. Implementation****Rate Structure Data Volumetric Rates for Water Service by Customer Class****1. Residential**

a. Water Rate Structure	Increasing Block Seasonal
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	\$17517449
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

2. Commercial

a. Water Rate Structure	Increasing Block Seasonal
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	\$9577374
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

3. Industrial

a. Water Rate Structure	Increasing Block Seasonal
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	\$9577374
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

4. Institutional / Government

a. Water Rate Structure	Increasing Block Seasonal
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	\$949425
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

5. Irrigation

a. Water Rate Structure	Increasing Block Seasonal
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	\$949425
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

6. Other

a. Water Rate Structure	Service Not Provided
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
---	----

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 5/23/

BMP 12: Conservation Coordinator

Reporting Unit:

**City of Riverside, Public
Utilities**BMP Form Status:
100% CompleteYear:
2001**A. Implementation**

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ? no
4. Partner agency's name:
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 5%
 - b. Coordinator's Name Michele Kovach
 - c. Coordinator's Title Programs & Services Representative
 - d. Coordinator's Experience and Number of Years 12
 - e. Date Coordinator's position was created (mm/dd/yyyy) 10/31/1995
6. Number of conservation staff, including Conservation Coordinator. 2

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	25000	25000
2. Actual Expenditures	25000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 5/23/

BMP 13: Water Waste Prohibition

Reporting Unit:

**City of Riverside, Public
Utilities**BMP Form Status: **Year:**
100% Complete 2001**A. Requirements for Documenting BMP Implementation**

1. Is a water waste prohibition ordinance in effect in your service area? yes

a. If YES, describe the ordinance:

Copy of ordinance is on file with CUWCC

2. Is a copy of the most current ordinance(s) on file with CUWCC? yes

a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

See ordinance

See ordinance

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

a. Gutter flooding yes

b. Single-pass cooling systems for new connections yes

c. Non-recirculating systems in all new conveyor or car wash systems no

d. Non-recirculating systems in all new commercial laundry systems no

e. Non-recirculating systems in all new decorative fountains yes

f. Other, please name no

2. Describe measures that prohibit water uses listed above:

See ordinance

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

a. Allow the sale of more efficient, demand-initiated regenerating DIR models. yes

b. Develop minimum appliance efficiency standards that:

i.) Increase the regeneration efficiency

- | | |
|--|-----|
| standard to at least 3,350 grains of hardness removed per pound of common salt used. | yes |
| ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. | yes |
| c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. | yes |
| 4. Does your agency include water softener checks in home water audit programs? | no |
| 5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? | yes |

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	187500	187500
2. Actual Expenditures	187500	

D. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | no |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

E. Comments

Reported as of 5/2/

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:

City of Riverside, Public Utilities

BMP Form Status:

100% Complete

Year:

2001

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	351	0
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
Total	351	0

6. Describe your agency's ULFT program for single-family residences.

Rebate program for customers.

7. Describe your agency's ULFT program for multi-family residences.

Rebate program included with single family.

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

NA

NA

B. Residential ULFT Program Expenditures

This Year	Next Year
-----------	-----------

1. Budgeted Expenditures	150000	15000
2. Actual Expenditures	50000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

APPENDIX C.3

CUWCC Coverage Report for 2001-2002

Appendix C.3

BMP 01 Coverage: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
City of Riverside, Public Utilities

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

A Reporting Unit (RU) must meet three conditions to satisfy strict compliance for BMP 1.

Condition 1: Adopt survey targeting and marketing strategy on time

Condition 2: Offer surveys to 20% of SF accounts and 20% of MF units during report period

Condition 3: Be on track to survey 15% of SF accounts and 15% of MF units within 10 years of implementation start date.

Test for Condition 1

City of Riverside, Public Utilities to Implement Targeting/Marketing Program by:	1999		
		<u>Single-Family</u>	<u>Multi-Family</u>
Year City of Riverside, Public Utilities Reported Implementing Targeting/Marketing Program:	1950	1950	
City of Riverside, Public Utilities Met Targeting/Marketing Coverage Requirement:	YES	YES	

Test for Condition 2

			<u>Single-Family</u>	<u>Multi-Family</u>
Survey Program to Start by:	1998	Residential Survey Offers (%)	66.01%	5.29%
Reporting Period:	01-02	Survey Offers \geq 20%	YES	NO

Test for Condition 3

	Completed Residential Surveys	
	Single Family	Multi-Family
Total Completed Surveys 1999 - 2002:	69,434	4,060
Past Credit for Surveys Completed Prior to 1999 (Implementation of Reporting Database):	406	406
Total + Credit	69,840	4,466
Residential Accounts in Base Year	53,386	26,453
City of Riverside, Public Utilities Survey Coverage as % of Base Year Residential Accounts	130.82%	16.88%
Coverage Requirement by Year 5 of Implementation per Exhibit 1	4.90%	4.90%
City of Riverside, Public Utilities on Schedule to Meet 10-Year Coverage Requirement	YES	YES

BMP 1 COVERAGE STATUS SUMMARY:

**Water supplier has not met one or more coverage requirements
for this BMP.**

BMP 02 Coverage: Residential Plumbing Retrofit

Reporting Unit:

City of Riverside, Public Utilities

Reporting Period:

01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one of three conditions to satisfy strict compliance for BMP 2.

Condition 1: The agency has demonstrated that 75% of SF accounts and 75% of MF units constructed prior to 1992 are fitted with low-flow showerheads.

Condition 2: An enforceable ordinance requiring the replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts is in place for the agency's service area.

Condition 3: The agency has distributed or directly installed low-flow showerheads and other low-flow plumbing devices to not less than 10% of single-family accounts and 10% of multi-family units constructed prior to 1992 during the reporting period.

Test for Condition 1

<u>Report Year</u>	<u>Report Period</u>	<u>Single-Family</u>		<u>Multi-Family</u>	
		<u>Reported Saturation</u>	<u>Saturation > 75%?</u>	<u>Reported Saturation</u>	<u>Saturation > 75%?</u>
1999	99-00	78.00%	YES	78.00%	YES
2000	99-00	80.00%	YES	80.00%	YES
2001	01-02	81.00%	YES	82.00%	YES
2002	01-02	81.00%	YES	81.00%	YES
2003	03-04	83.00%	YES	83.00%	YES
2004	03-04	83.00%	YES	83.00%	YES

Test for Condition 2

<u>Report Year</u>	<u>Report Period</u>	<u>City of Riverside, Public Utilities has ordinance requiring showerhead retrofit?</u>
1999	99-00	NO
2000	99-00	NO
2001	01-02	NO
2002	01-02	NO
2003	03-04	NO
2004	03-04	NO

Test for Condition 3

Reporting Period: 01-02

<u>1992 SF Accounts</u>	<u>Num. Showerheads Distributed to SF Accounts</u>	<u>Single-Family Coverage Ratio</u>	<u>SF Coverage Ratio > 10%</u>
54,727	49,050	89.6%	YES
<u>1992 MF Accounts</u>	<u>Num. Showerheads Distributed to MF Accounts</u>	<u>Multi-Family Coverage Ratio</u>	<u>MF Coverage Ratio > 10%</u>
25,006	4,550	18.2%	YES

BMP 2 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:

City of Riverside, Public Utilities

Reporting Period:

01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 3 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

Test for Conditions 1 and 2

<u>Report Year</u>	<u>Report Period</u>	<u>Pre-Screen Completed</u>	<u>Pre-Screen Result</u>	<u>Full Audit Indicated</u>	<u>Full Audit Completed</u>
1999	99-00				
2000	99-00	YES	91.7%	No	NO
2001	01-02	NO	100.0%	No	NO
2002	01-02	NO	100.0%	No	NO
2003	03-04	NO	100.0%	No	NO
2004	03-04	NO	100.0%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:
**City of Riverside,
 Public Utilities**

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as
 effective as" implementation
 during report period?

No

Warning: The BMP 4 form is not 100% complete for one or more
 report years. This may produce inaccurate results for this report.

An agency must be on track to retrofit 100% of its unmetered
 accounts within 10 years to be in compliance with BMP 4.

Test for Compliance

Total Meter Retrofits
 Reported through 2002

No. of Unmetered
 Accounts in Base Year
 Meter Retrofit Coverage
 as % of Base Year
 Unmetered Accounts

Coverage Requirement
 by Year 4 of
 Implementation per
 Exhibit 1

24.0%

RU on Schedule to meet
 10 Year Coverage
 Requirement

YES

BMP 4 COVERAGE STATUS SUMMARY:

**Coverage status cannot be calculated. Water supplier data is
 missing that is required to calculate coverage status for this
 BMP.**

BMP 05 Coverage: Large Landscape Conservation Programs and Incentives

Reporting Unit:

City of Riverside, Public Utilities

Reporting Period:

01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet three conditions to comply with BMP 5.

Condition 1: Develop water budgets for 90% of its dedicated landscape meter accounts within four years of the date implementation is to start.

Condition 2: (a) Offer landscape surveys to at least 20% of its CII accounts with mixed use meters each report cycle and be on track to survey at least 15% of its CII accounts with mixed use meters within 10 years of the date implementation is to start OR (b) Implement a dedicated landscape meter retrofit program for CII accounts with mixed use meters or assign landscape budgets to mixed use meters.

Condition 3: Implement and maintain customer incentive program(s) for irrigation equipment retrofits.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>No. of Irrigation Meter Accounts</u>	<u>No. of Irrigation Accounts with Budgets</u>	<u>Budget Coverage Ratio</u>	<u>90% Coverage Met by Year 4</u>
1999	99-00	1	358			NA
2000	99-00	2	358			NA
2001	01-02	3	358			NA
2002	01-02	4	358			No
2003	03-04	5	358			No
2004	03-04	6	358			No

Test for Condition 2a (survey offers)

Select Reporting Period:	01-02
Large Landscape Survey Offers as % of Mixed Use Meter CII Accounts	4.4%
Survey Offers Equal or Exceed 20% Coverage Requirement	NO

Test for Condition 2a (surveys completed)

Total Completed Landscape Surveys Reported through	236
Credit for Surveys Completed Prior to Implementation of Reporting Database	12
Total + Credit	248
CII Accounts in Base Year	4,600
RU Survey Coverage as a % of Base Year CII Accounts	5.4%
Coverage Requirement by Year of Implementation per Exhibit 1	3.6%
RU on Schedule to Meet 10 Year Coverage Requirement	YES

Test for Condition 2b (mixed use budget or meter retrofit program)

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>Agency has mix-use budget program</u>	<u>No. of mixed-use budgets</u>
1999	99-00	1	NO	
2000	99-00	2	NO	
2001	01-02	3	NO	
2002	01-02	4	NO	
2003	03-04	5	NO	
2004	03-04	6	NO	

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 4 Implementation Year</u>	<u>No. of mixed use CII accounts</u>	<u>No. of mixed use CII accounts fitted with irrig. meters</u>
1999	99-00	1		
2000	99-00	2	4,356	
2001	01-02	3	4,356	
2002	01-02	4		
2003	03-04	5		
2004	03-04	6		

Test for Condition 3

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>RU offers financial incentives?</u>	<u>No. of Loans</u>	<u>Total Amt. Loans</u>
1999	99-00	1	NO		

2000	99-00	2	NO		
2001	01-02	3	NO		
2002	01-02	4	NO		
2003	03-04	5	NO		
2004	03-04	6	NO		
<u>Report Year</u>	<u>Report Period</u>	<u>No. of Grants</u>	<u>Total Amt. Grants</u>	<u>No. of rebates</u>	<u>Total Amt. Rebates</u>
1999	99-00				
2000	99-00				
2001	01-02				
2002	01-02				
2003	03-04				
2004	03-04				

BMP 5 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

BMP 06 Coverage: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
City of Riverside, Public Utilities

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 6.

Condition 1: Offer a cost-effective financial incentive for high-efficiency washers if one or more energy service providers in service area offer financial incentives for high-efficiency washers.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 6 Implementation Year</u>	<u>Rebate Offered by ESP?</u>	<u>Rebate Offered by RU?</u>	<u>Rebate Amount</u>
1999	99-00	1	NO	NO	
2000	99-00	2	YES	YES	100.00
2001	01-02	3	YES	YES	100.00
2002	01-02	4	YES	YES	100.00
2003	03-04	5	YES	YES	100.00
2004	03-04	6	YES	YES	100.00

<u>Year</u>	<u>Report Period</u>	<u>BMP 6 Implementation Year</u>	<u>No. Rebates Awarded</u>	<u>Coverage Met?</u>
1999	99-00	1		YES
2000	99-00	2	353	YES
2001	01-02	3	302	YES
2002	01-02	4	486	YES
2003	03-04	5	967	YES
2004	03-04	6	594	YES

BMP 6 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 07 Coverage: Public Information Programs

Reporting Unit:

City of Riverside, Public Utilities

Reporting Period:

01-02**MOU Exhibit 1 Coverage Requirement**

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 7 Implementation Year</u>	<u>RU Has Public Information Program?</u>
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 7 COVERAGE STATUS SUMMARY:**Water supplier is meeting coverage requirements for this BMP.**

BMP 08 Coverage: School Education Programs

Reporting Unit:

City of Riverside, Public Utilities

Reporting Period:

01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 8 Implementation Year</u>	<u>RU Has School Education Program?</u>
1999	99-00	2	NO
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 8 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 09 Coverage: Conservation Programs for CII Accounts

Reporting Unit:

City of Riverside, Public Utilities

Reporting Period:

01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet three conditions to comply with BMP 9.

Condition 1: Agency has identified and ranked by use commercial, industrial, and institutional accounts.

Condition 2(a): Agency is on track to survey 10% of commercial accounts, 10% of industrial accounts, and 10% of institutional accounts within 10 years of date implementation to commence.

OR

Condition 2(b): Agency is on track to reduce CII water use by an amount equal to 10% of baseline use within 10 years of date implementation to commence.

OR

Condition 2(c): Agency is on track to meet the combined target as described in Exhibit 1 BMP 9 documentation.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 9 Implementation Year</u>	<u>Ranked Com. Use</u>	<u>Ranked Ind. Use</u>	<u>Ranked Inst. Use</u>
1999	99-00	1	YES	YES	YES
2000	99-00	2	YES	YES	YES
2001	01-02	3	YES	YES	YES
2002	01-02	4	YES	YES	YES
2003	03-04	5	YES	YES	YES
2004	03-04	6	YES	YES	YES

Test for Condition 2a

	Commercial	Industrial	Institutional
Total Completed Surveys Reported through 2002	54	54	54
Credit for Surveys Completed Prior			

to Implementation of Reporting Databases	20	20	20
Total + Credit	74	74	74
CII Accounts in Base Year	4,172	351	77
RU Survey Coverage as % of Base Year CII Accounts	1.8%	21.1%	96.1%
Coverage Requirement by Year 4 of Implementation per Exhibit 1	2.4%	2.4%	2.4%
RU on Schedule to Meet 10 Year Coverage Requirement	NO	YES	YES

Test for Condition 2a

<u>Year</u>	<u>Report Period</u>	<u>BMP 9 Implementation Year</u>	<u>Performance Target Savings (AF/yr)</u>	<u>Performance Target Savings Coverage</u>	<u>Performance Target Savings Coverage Requirement</u>	<u>Coverage Requirement Met</u>
1999	99-00	1			0.5%	NO
2000	99-00	2			1.0%	NO
2001	01-02	3	675	3.1%	1.7%	YES
2002	01-02	4	726	3.4%	2.4%	YES
2003	03-04	5	762	3.5%	3.3%	YES
2004	03-04	6	800	3.7%	4.2%	NO

Test for Condition 2c

Total BMP 9 Surveys + Credit	222
BMP 9 Survey Coverage	4.8%
BMP 9 Performance Target Coverage	3.4%
BMP 9 Survey + Performance Target Coverage	8.2%
Combined Coverage Equals or Exceeds Coverage Requirement?	YES

BMP 9 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 11 Coverage: Conservation Pricing

Reporting Unit:

City of Riverside, Public Utilities

Reporting Period:

01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing.

Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

a) Non-conserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates); rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>RU Employed Non Conserving Rate Structure</u>	<u>RU Meets BMP 11 Coverage Requirement</u>
1999	99-00	NO	YES
2000	99-00	NO	YES
2001	01-02	NO	YES
2002	01-02	NO	YES
2003	03-04	NO	YES
2004	03-04	NO	YES

BMP 11 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 12 Coverage: Conservation Coordinator

Reporting Unit:
City of Riverside, Public Utilities

Reporting
Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

<u>Report Year</u>	<u>Report Period</u>	<u>Conservation Coordinator Position Staffed?</u>	<u>Total Staff on Team (incl. CC)</u>
1999	99-00	YES	3
2000	99-00	YES	3
2001	01-02	YES	2
2002	01-02	YES	3
2003	03-04	YES	2
2004	03-04	YES	2

BMP 12 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 13 Coverage: Water Waste Prohibition

Reporting Unit:

Reporting Period:

City of Riverside, Public Utilities

01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 13.

Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, single pass cooling systems in new connections, non-recirculating systems in all new conveyer car wash and commercial laundry systems, and non-recycling decorative water fountains.

Test for Condition 1

Agency or service area prohibits:

<u>Year</u>	<u>Gutter Flooding</u>	<u>Single- Pass Cooling Systems</u>	<u>Single- Pass Car Wash</u>	<u>Single- Pass Laundry</u>	<u>Single- Pass Fountains</u>	<u>Other</u>	<u>RU has ordinance that meets coverage requirement</u>
1999	yes	yes	no	no	yes	no	NO
2000	yes	yes	no	no	yes	no	NO
2001	yes	yes	no	no	yes	no	NO
2002	yes	yes	no	no	yes	no	NO
2003	yes	yes	no	no	yes	no	NO
2004	yes	yes	no	no	yes	no	NO

BMP 13 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: **City of Riverside, Public Utilities**

MOU Exhibit 1 Coverage Requirement

A Reporting Unit (RU) must meet one of the following conditions to be in compliance with BMP 14.

Condition 1: Retrofit-on-resale (ROR) ordinance in effect in service area.

Condition 2: Water savings from toilet replacement programs equal to 90% of Exhibit 6 coverage requirement.

An agency with an exemption for BMP 14 is not required to meet one of the above conditions. This report treats an agency with missing base year data required to compute the Exhibit 6 coverage requirement as out of compliance with BMP 14.

Status: Water supplier has not met one or more coverage requirements for this BMP. as of 2004

<u>Coverage</u> <u>Year</u>	<u>BMP 14</u> <u>Data</u> <u>Submitted</u> <u>to</u> <u>CUWCC</u>	<u>Exemption</u> <u>Filed with</u> <u>CUWCC</u>	<u>ROR</u> <u>Ordinance</u> <u>in Effect</u>	<u>Exhibit 6</u> <u>Coverage</u> <u>Req'mt</u> <u>(AF)</u>	<u>Toilet</u> <u>Replacement</u> <u>Program</u> <u>Water</u> <u>Savings*</u> <u>(AF)</u>
1998	Yes			40.35	
1999	Yes	No	Yes	117.12	
2000	Yes	No	No	226.69	10.26
2001	Yes	No	No	365.70	29.38
2002	Yes	No	No	531.04	58.12
2003	Yes	No	No	719.84	108.05
2004	Yes	No	No	929.45	190.51
2005	No	No	No	1157.41	
2006	No	No	No	1401.47	
2007	No	No	No	1659.54	

*NOTE: Program water savings listed are net of the plumbing code. Savings are cumulative (not annual) between 1991 and the given year. Residential ULFT count data from unsubmitted forms are NOT included in the calculation.

BMP 14 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: City of Riverside, Public Utilities

BMP 14 Coverage Calculation Detail: Retrofit on Resale (ROR) Ordinance Water Savings

	Single Family	Mu Fan
1992 Housing Stock		
Average rate of natural replacement (% of remaining stock)	.04	.0
Average rate of housing demolition (% of remaining stock)	.005	.0
Estimated Housing Units with 3.5+ gpf Toilets in 1997	44669.40	2041
Average resale rate	.02	.0
Average persons per unit		
Average toilets per unit		
Average savings per home (gpd; from Exhibit 6)	35.2	30

Single Family Housing Units

Coverage Year	Unretrofitted Houses	Houses Sold	Houses Unsold	Sold and Retrofitted	Sold and Already Retrofitted	Unsold and Retrofitted	Gross ROR Savings (AFY)	Nat'l Replacement Only Savings (AFY)	Net I Savi (AF)
1998	42038.20	888.92	43557.14	888.92		1742.29	500.23	466.59	
1999	39561.98	884.48	43339.35	836.56	47.92	1639.66	597.85	533.89	
2000	37231.62	880.05	43122.65	787.28	92.77	1543.08	689.72	598.51	
2001	35038.53	875.65	42907.04	740.91	134.74	1452.18	776.18	660.56	1
2002	32974.62	871.28	42692.50	697.27	174.01	1366.64	857.55	720.14	1
2003	31032.28	866.92	42479.04	656.19	210.72	1286.14	934.12	777.34	1
2004	29204.36	862.58	42266.65	617.54	245.04	1210.38	1006.18	832.27	1
2005	27484.10	858.27	42055.31	581.17	277.11	1139.09	1074.00	885.02	1
2006	25865.18	853.98	41845.04	546.93	307.05	1071.99	1137.82	935.66	2
2007	24341.62	849.71	41635.81	514.72	334.99	1008.85	1197.89	984.29	2

Multi Family Housing Units

Coverage Year	Unretrofitted Houses	Houses Sold	Houses Unsold	Sold and Retrofitted	Sold and Already Retrofitted	Unsold and Retrofitted	Gross ROR Savings (AFY)	Nat'l Replacement Only Savings (AFY)	Net I Savi (AF)
1998	19403.16	203.08	20105.32	203.08		804.21	192.64	185.94	
1999	18445.58	202.07	20004.79	193.06	9.01	764.52	225.57	212.76	

2000	17535.25	201.06	19904.77	183.53	17.52	726.79	256.87	238.51
2001	16669.85	200.05	19805.25	174.48	25.58	690.92	286.62	263.24
2002	15847.16	199.05	19706.22	165.87	33.19	656.83	314.91	286.98
2003	15065.07	198.06	19607.69	157.68	40.38	624.41	341.80	309.78
2004	14321.58	197.07	19509.65	149.90	47.17	593.59	367.37	331.67
2005	13614.78	196.08	19412.10	142.50	53.58	564.30	391.67	352.69
2006	12942.86	195.10	19315.04	135.47	59.63	536.45	414.77	372.87
2007	12304.11	194.13	19218.47	128.78	65.34	509.97	436.73	392.25

APPENDIX D.1

Water Shortage Ordinance

Appendix D.1

City of Riverside Public Utilities Department Water Rule #9

Shortage of Water Supply and Interruption of Delivery

A. Interruption of Delivery A. Interruption of Delivery

The Water Utility shall exercise reasonable diligence and care to furnish and deliver a continuous and sufficient supply of water to all Customers and to avoid any shortage or interruption of service. The Water Utility shall not be liable for interruptions, shortage or insufficiency of supply, or any loss or damage occasioned thereby.

B. Temporary Suspension of Water Service

The Water Utility reserves the right to temporarily suspend the delivery of water whenever it may be necessary for the purpose of making repairs or improvements to its system. The making of such repairs or improvements will be constructed as rapidly as is feasible and, whenever possible, at such times as shall cause the least inconvenience to the Customers. In all cases of such interruptions of water service, the Water Utility shall make a reasonable attempt to give advance notice to the Customers who may be affected.

C. Shortage of Water Supply

In the event of any actual or threatened shortage of water supply, and during the period of such shortage, the Water Utility shall apportion the available supply of water among its Customers in the most equitable manner possible to continue service fairly and without discrimination, except that preference shall be given to such service as is essential to the public interest and to the preservation of life and health.

Adopted by Board of Public Utilities: December 16, 1994

Approved by City Council: April 18, 1995

Effective Date: May 18, 1995

APPENDIX D.2

No Waste Ordinance

Appendix D.2

City of Riverside Public Utilities Department Water Rule #15 Water Waste

Any Person using, wasting, or permitting water to run from any water main, tap, fire hydrant, or other connection in a manner not authorized shall pay to the City for all such water at the rates fixed in Water Rate Schedule WA-1, notwithstanding the fact that such water is not metered.

Reference is made to Riverside Municipal Code Section 13.04.120 - RUNNING WASTE WATER UPON STREETS: "It is unlawful for any Person using water for irrigation, domestic or other use or purpose, to run any waste water or allow the same to run onto or upon any public street in the City, but each Person must care for and dispose of his own waste water."

Reference is also made to Riverside Municipal Code Section 1.01.110:

1.01.110 PENALTY FOR VIOLATION - CONTINUING VIOLATIONS.

"Whenever in this Code or in any other ordinance of the City, or any rule or regulation promulgated pursuant thereto, any act is prohibited or is made or declared to be unlawful or an offense, or the doing of any act is required or the failure to do any act is declared to be unlawful or a misdemeanor, where no specific penalty is provided for, the violation of any such provision of this Code or any other ordinance of the City shall be punishable by a fine not exceeding one thousand dollars or imprisonment for a term not exceeding six months, or by both such fine and imprisonment; except that notwithstanding any other provisions of this Code, any such violation constituting a misdemeanor may, in the discretion of the City Attorney, be charged and prosecuted as an infraction.

Any person convicted of an infraction under the provisions of this code, unless provision is otherwise herein made, shall be punishable by a fine not exceeding one hundred dollars for a first violation, a fine not exceeding two hundred dollars for a second violation of the same provision within one year, and a fine not exceeding five hundred dollars for each additional violation of the same provision within one year."

"Every day any violation of this Code or any other ordinance of the City shall continue shall constitute a separate offense."

Whenever it appears to the Director that water delivered by the Water Utility is being used in violation of the terms of this Rule, he shall give written notice to the person so wasting water of his intention, after a reasonable time to be therein stated, to shut-off the water supply to the Person's Premises.

In the event that waste of water shall be found to be due to leaking, or defective or wasteful equipment, such water shall remain shut-off until such Person makes necessary corrections in their equipment to prevent further water waste.

Adopted by Board of Public Utilities: December 16, 1994

Approved by City Council: April 18, 1995

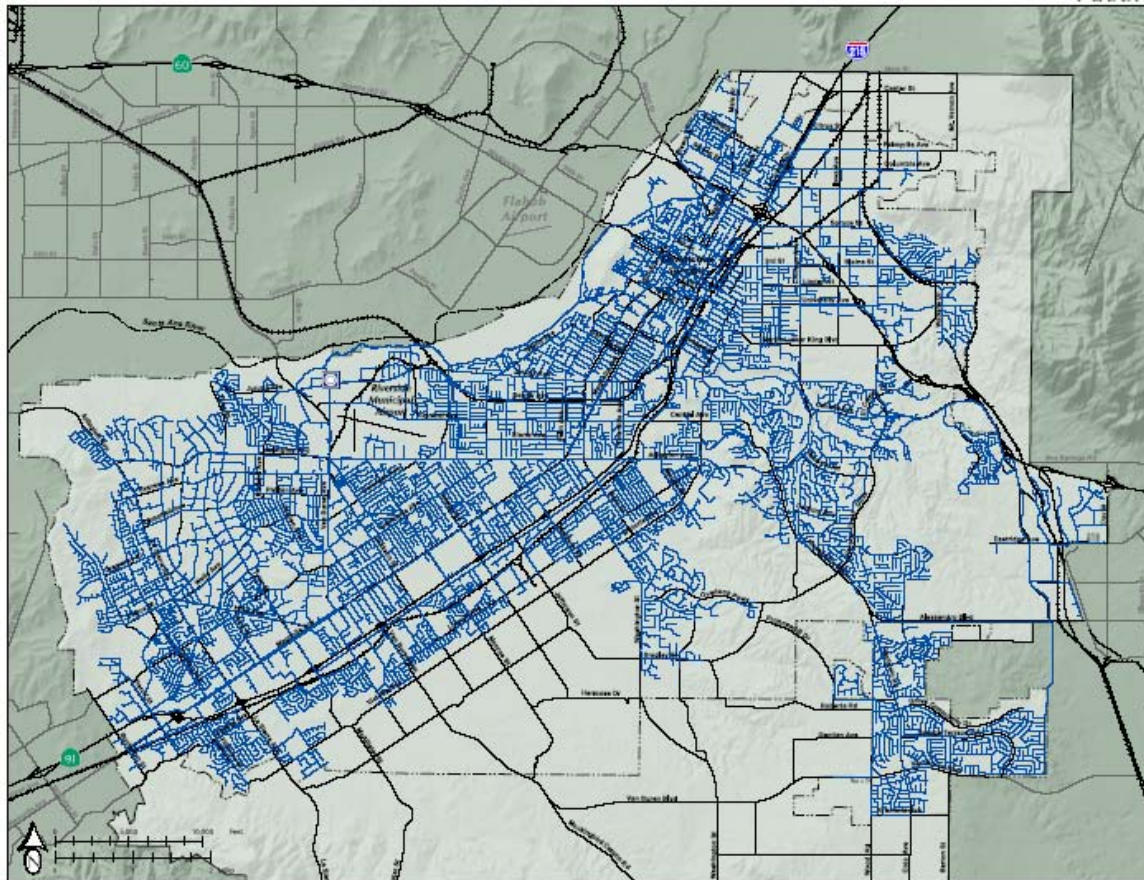
Effective Date: May 18, 1995

APPENDIX E.1

City of Riverside Wastewater Collection System

Appendix E.1

City of Riverside Wastewater Collection System.



Source: Draft City of Riverside General Plan 2025.

APPENDIX E.2

Recycled Water Rules

Appendix E.2

City of Riverside Public Utilities Department Water Rule #18

Recycled Water Rules

A. INTRODUCTION

1. Goal

The Goal of the City of Riverside is to encourage the use of recycled water in new and existing development. Recycled water will be used for land irrigation, impoundments, and commercial and industrial purposes where said use is consistent with regulatory requirements, the preservation of public health and welfare, and the environment. Recycled water will be utilized whenever and wherever financially and technically feasible, when the City can deliver recycled water at a price less than or equal to the cost of potable water, or when deemed in the best interest of the City.

These Recycled Water Rules (Rules) have been adopted to promote the reuse of water resources and to provide for the maximum public benefit from the use of the City's recycled water. Use of recycled water is necessary in order to minimize purchase of expensive imported potable water and to conserve high quality groundwater. Recycled water shall be used in accordance with the standards of treatment and water quality requirements set forth in the California Code of Regulations, Titles 17 and 22, to protect the public health.

2. Scope

The provisions of these Rules shall govern the requirements for recycled water use, the commencement and termination of recycled water service, and the conditions and regulations of such service within the City's jurisdiction. These Rules shall be interpreted in accordance with the purpose, policy and intent of these Rules and the definitions as set forth in Section 2 herein. The provisions of these Rules shall apply to the use of all recycled water delivered by the City. To comply with applicable Federal, State, and local regulatory agency requirements, provisions are made in these Rules for the regulation of recycled water use.

These Rules pertain only to the transmission and distribution of effluent from the Riverside Water Quality Control Plant. The PWD retains full control and responsibility for operating the Riverside Water Quality Control Plant and for producing effluent which

meets the Regional Water Quality Control Board and State Department of Health Services requirements.

B. DEFINITIONS

1. Definitions

Unless the context specifically indicates otherwise, the meaning of the terms used in these Rules shall be as follows:

Agricultural Use - Recycled water used for the production of crops and/or livestock and the preparation of these products for market.

Air-gap Separation - A physical separation of at least double the diameter of the supply pipe between the free flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel, measured vertically above the overflow rim of the vessel. In no case shall the air gap be less than one inch.

Applicant - Any person, group, firm, partnership, corporation, association, or agency who applies for recycled water service under the terms of these Rules. An approved applicant becomes a user.

Application Rate - The rate at which recycled water is applied to a use area.

Approved Use Area - A site, with well-defined boundaries, designated in a user permit issued by the PUD to receive recycled water for an approved use and acknowledged by any and all applicable regulatory agencies.

As-Built Drawings - Record drawings that depict the completed recycled water service facilities as constructed or modified.

Automatic System - Automatic controllers, timers, valves, and associated equipment used to program irrigation systems for the application of recycled water.

Backflow - A flow condition, caused by a differential in pressure, that causes the flow of water or other liquids, gases, mixtures or substances into the distributing pipes of a water supply from any source or sources other than an approved water supply source. Backsiphoning is one cause of backflow. Backpressure is another cause.

Backup Facility Capacity Charge - A charge for water supply facilities including but not limited to production, transmission and storage facilities.

Board - The City of Riverside Board of Public Utilities.

City - The City of Riverside or designated employees of Public Utilities Department or Public Works Department as contained in the Interdepartmental Agreement.

Commercial Use - Any building for office or commercial uses with water requirements which include, but are not limited to, landscape irrigation, toilets, urinals and decorative fountains.

Commodity Charge - A charge imposed by the PUD for all recycled water used, whether such water use is estimated or is actually metered.

Cross-Connection - Any unprotected and/or unapproved connection or potential connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water or substance that is not or cannot be approved as safe, wholesome and potable for human consumption.

Customer Service Valve - Valve at the terminus of the service connection, after the meter, which is the point of connection with the user's onsite facilities and may be operated by the user, per standard drawing detail.

Direct Beneficial Use - The use of recycled water which has been transported from the point of treatment to the point of use without an intervening discharge to waters of the State.

Distribution System Fee - A charge for facilities which comprise the distribution grid system including recycled water mains, valves and appurtenances which have been, or will be installed by or for the PUD.

Project Report - A report submitted detailing recycled water use area, plans, specifications and methods to be used by the Program Specialist for assuring that installation and operation of the system will not result in cross-connections.

Hose Bib - An outdoor faucet or similar device to which a common garden hose can be readily attached.

Industrial Process Water - Water for any industrial facility with requirements which include, but are not limited to rinsing, washing, cooling, circulation or construction.

Inspector - Any person authorized by the City to perform inspection of either onsite or offsite facilities prior to construction, during construction and during operation.

Interdepartmental Agreement - An agreement between the Department of Public Utilities and Department of Public Works outlining the responsibilities of each department pertaining to recycled water.

Irrigation Use - An approved use of reclaimed (or recycled) water for landscape irrigation as defined for reclaimed water under Title 22, Division 4, Chapter 3, Article 4 of the California Code of Regulations.

Landscape Impoundment - A body of water containing (all or part) recycled water which is used for aesthetic or irrigation purposes and which is not intended for public contact or ingestion.

Non-Potable Water - Recycled wastewater and groundwater not meeting Federal, State and local drinking water standards.

Non-Potable Water Policy - Policy that covers not only recycled water but also groundwater that do not meet Federal, State or local drinking water standards.

NPDES Permit - National Pollutant Discharge Elimination System permit granted to the Riverside Water Quality Control Plant by the California Regional Water Quality Control Board, Santa Ana Region.

Offsite Facilities - Facilities under the control of the PUD, including recycled water pipelines, reservoirs, valves, connections, and other appurtenances beginning at the PUD service connection meter at the RWQCP and ending at the point of connection with the customer's facilities.

Onsite Facilities - Facilities under the control of the applicant, owner or customer including but not limited to residential or commercial landscape irrigation systems, and agricultural irrigation systems, beginning at the water service meter or meters.

Owner - Any holder of legal title, contract purchaser, or lessee under a lease with an unexpired term of more than one (1) year, of property for which recycled water service has been requested or established.

Potable Water - Water which conforms to the latest Federal, State and local drinking water standards.

Program Specialist - The designated individual(s) possessing current certification issued by the California-Nevada American Water Works Association for a Cross-Connection Control Program Specialist - Grade II.

PUD - shall mean the Public Utilities Department of the City of Riverside.

PWD - shall mean the Public Works Department of the City of Riverside.

Quick Coupler Connection - An outdoor piping outlet to which a special piping attachment can be added to allow a common garden hose attachment to be used.

Reclaimed Water - As defined in Title 22, Division 4, Chapter 3, Environmental Health of the California Code of Regulations (Code) means water which, as a result of treatment of domestic/industrial wastewater is suitable for direct beneficial use or a controlled use that otherwise would not occur; such treatment of wastewater having been accomplished in accordance with the criteria for assurance of reliability, as set forth in the Code.

Recycled Water - Substitute term for reclaimed water as defined in Section 13050 of the California Water Code.

Recycled Water User Permit - A permit issued by the PUD to a recycled water service applicant after the satisfactory completion of the service application procedures set forth in these Rules. This permit constitutes a service agreement that legally binds the user to all conditions in these Rules and to any and all Regulatory Agency requirements.

Recreational Impoundment - A body of reclaimed water used for recreational activities including, but not limited to, fishing, boating and/or swimming. Allowable uses will depend on treatment level of the reclaimed water.

Reduced Pressure Principle Assembly - An assembly incorporating two or more check valves and an automatically operating differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

Regional Board - The California Regional Water Quality Control Board, Santa Ana Region.

Regulatory Agencies - Those public agencies legally constituted to protect the public health and water quality, such as the Federal EPA, California Department of Health Services, California Regional Water Quality Control Board, Riverside County Health Department, Department of Fish and Game, U.S. Army Corps of Engineers, and Riverside County Flood Control and Water Conservation District.

Riverside Water Quality Control Plant (RWQCP) - City of Riverside Wastewater Treatment Plant located at 5950 Acorn Street.

Security Deposit - Monies required to be deposited with the PUD for the purpose of guaranteeing payment of monthly bills rendered for recycled water service.

Service - The furnishing of recycled water to a user.

Service Connection Fee - A charge imposed by and paid to the PUD to cover the installation costs of recycled water facilities to be paid for by the user/applicant as a condition prior to service.

Shall - means mandatory.

Supervisor - The Onsite Recycled Water Supervisor who shall be a qualified person designated by a recycled water user and approved by the PUD. This person shall be knowledgeable in the construction and operation of recycled water and irrigation systems and in the application of the Federal, State and local guidelines, criteria, standards, rules and regulations governing the use of recycled water.

Tertiary Effluent - secondary effluent which has been disinfected and filtered for purposes of removing a high percentage of pathogens and suspended solids. Allowable uses include body contact and irrigation of human food crops.

Title 17 and Title 22 - Title 17 and Title 22 of the California Code of Regulations.

User - Any person, persons or firm (includes any public utility, municipality or other public body or institution) issued a recycled water user permit by the PUD. The user and owner may be one and the same.

Violation - Noncompliance with any condition or conditions of these regulations and/or a user permit by any person, action or occurrence, whether wilfully or by accident.

Water Utility - The City of Riverside Public Utilities Department, Water Division.

C. GENERAL PROVISIONS

1. Administration

Except as otherwise provided herein, the City shall administer, implement and enforce the provisions of these Rules. Any powers granted or duties imposed upon the City may be delegated by the City to persons acting in the beneficial interest of or in the employ of the City.

2. Notice

Unless otherwise provided herein, any notice required to be given by the City under these Rules shall be in writing and served in person or by first class, registered or certified mail. Notice shall be deemed to have been given at the time of deposit, postage prepaid, in a facility regularly serviced by the United States Postal Service.

3. Confidentiality

Information and data on a user obtained from reports, questionnaires, permit applications, permits, sample data, and monitoring programs and from inspections shall be available to the public or other governmental agency without restriction unless the user specifically requests and is able to demonstrate to the satisfaction of the City that the release of such information would divulge information, processes or method of productions entitled to protection as trade secrets of the user.

4. Severability

If any section, subsection, sentence, clause or phrase of these Rules is for any reason held to be invalid or unconstitutional, such decision shall not affect the remaining portions of these Rules. The Board hereby declares that it would have approved said regulations by

section, subsection, sentence, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared invalid or unconstitutional.

5. Amendments

These Rules may be amended by the Board at any regular or special meeting for cause determined by the Board or PUD staff and without the approval of any user and will be administered as such. Insofar as these Rules support portions of Titles 17 and 22, any amendments to those documents are also immediately incorporated in these Rules.

6. Service Area

The regulations set forth herein pertain to recycled water service to lands and/or improvements lying within the legal boundaries of the Water Service Area of the City, unless otherwise stated.

7. Protection of Public Health

The City reserves the right to take any action with respect to the operation of the recycled water system and at such time as it deems proper to safeguard public health.

8. Liability

The City assumes no responsibility for the maintenance and operation of any onsite recycled water system beyond that which it retains with respect to violations of the regulatory agency requirements. The owner assumes all liability and responsibility of every other kind to the end that the City shall be kept whole and blameless at all times in any claim resulting from matters involving quantities, quality, time or occasion of delivery, or any other phase of the maintenance, operation and service of the owner's onsite facilities.

9. Time Limits

Any time provided in any written notice or any provision of these Rules may be extended only by a written directive of the PUD and upon showing of good cause.

10. Damage to City's Equipment or Facilities

No person shall enter, break, damage, destroy, uncover, deface or tamper with any temporary or permanent structure, equipment or appurtenance which is part of the City's recycled water, sewerage or storm drain system.

Any recycled water user who causes damage to the City's facilities, detrimental effects on treatment processes or any other damages including the imposition of fines by the State, Federal or other regulatory agencies on the City, shall be liable to the City for all damage

occasioned thereby including, without limitation, administrative expenses. An administrative fee of 90 percent of City's costs shall be added to these charges and shall be payable within 30 days of invoicing by the City.

D. COMMENCEMENT OF SERVICES

1. General

No person shall make connection to the recycled water facilities of the PUD without a recycled water user permit issued by the PUD.

2. Application

Persons desiring to obtain recycled water service shall make application for a recycled water user permit by providing such information as the PUD deems appropriate to evaluate the request including, but not limited to:

a. Name, address and contact phone number for:

1.Applicant

2.Owner of property to be served

3.Onsite recycled water supervisor

4.System operator

b. Legal description of property to be served.

c. Map showing use area and location.

d. Onsite usage plan.

e. Scaled drawing delineating the subject service area, identifying location and size of all service connecting and delineating areas in which recycled water service is to be specifically excluded.

f. Anticipated use and application rate.

g. Signed application for recycled water user permit/waste discharge requirements.

Persons required to obtain recycled water service shall also make application for a recycled water user permit following the same procedure, within two weeks after notification by the City.

3. Application Procedure

- a. An application for a permit shall be made in writing, signed by the applicant, owner, and customer, if they are not one and the same.
- b. By signing the application, the owner/applicant will agree to comply with the requirements of any and all applicable Federal, State and local statutes, ordinances, regulations and other requirements. Current requirements will be available at the PUD office upon request.
- c. Upon receipt of an application, the PUD or its designated representative will review the application and may prescribe requirements in writing to the applicant as to the design of the facilities, the manner of construction, the manner of connection, the method of operation, the financial responsibility and the conditions of service.

4. Permit/Agreement

- a. The PUD shall issue a recycled water user permit upon review of the Project Report, approval of an application for recycled water service and completion of a recycled service agreement. The permit shall entitle the applicant to receive recycled water service upon the terms and conditions of these Rules.
- b. The permit/agreement shall include the following:
 - 1.Name and address of applicant;
 - 2.A drawing of the proposed system showing the location and size of all valves, pipes, outlets and appurtenances;
 - 3.A statement that no changes in the proposed system will be undertaken without application and approval of an amended permit;
 - 4.A statement recognizing potential penalties for violation of City rules and regulations; and
 - 5.Outline of the rate provisions, terms and conditions of service.
- c. A recycled water user permit will remain in effect unless:
 - 1.A change of ownership occurs;
 - 2.A change of user occurs;
 - 3.Use of recycled water changes; or
 - 4.A use violation has occurred which results in a service turn off.

5. Project Report

The applicant shall submit a report dealing with specific aspects of the project:

- a. Detailed description of the intended area of use describing the following:
 - 1.Type, location and number of facilities within the project area intending to use the dual plumbed systems.
 - 2.The estimated daily average number of people to be served by each facility.
 - 3.The specific boundaries of the area to be served including a scaled map showing the location of each facility intending to use the dual plumbed systems.
 - 4.The individual(s) responsible for the operation of dual systems at each facility.
 - 5.The specific use for recycled water at each facility.
- b. Plans and specifications describing the following:
 - 1.Proposed piping systems to be used or installed.
 - 2.Piping locations of both the recycled and potable systems.
 - 3.Type and location of each outlet or plumbing fixture that will be accessible to the public.
 - 4.The assemblies and methods to be used at each service connection to prevent backflow of recycled water into the offsite water distribution system.
- c. A description of preventing the installation of a cross-connection.
 - 1.A method to be used by PUD to assure that the installation and operation of the dual plumbing system will not result in cross-connections between the recycled water system and the potable water system.
 - 2.A description of the testing method to be used by the Program Specialist to verify the lack of cross-connections every four years.

A new application and Project Report must be submitted to reinstate a permit canceled due to any of the above criteria.

E. FEES / DEPOSITS / RATES

1. Fees and Charges

The applicant/owner shall be responsible for the installation of onsite facilities and shall reimburse the PUD for actual costs of labor, material and equipment associated with the service connection as prescribed and designed by the PUD, and necessary offsite and onsite inspection services, and plan check fees as prescribed in the City's domestic Water Rules.

Annual Inspection and Shutdown Verification Testing Fees - Annual inspection and shutdown verification tests will be performed by the PUD for a fee associated with the actual cost of providing the service, or the customer may employ the services of a Cross-Connection Control Program Specialist possessing a valid certification from the California-Nevada American Water Works Association and acceptable to the PUD.

Commodity Charge - The rate for recycled water service shall be determined for each separate recycled water application/project based on the actual cost of service including any necessary offsite or onsite capital facilities financed by the PUD, appropriate cost of capital charges associated with Operations and Maintenance costs, administration and general expense, and fees/charges from other regulatory agencies.

2. Security Deposit

The PUD may require that an applicant, owner or user post a security deposit. Such amount shall not be less than the estimated cost of recycled water service for a two-month period, or such other amount determined by the PUD. Upon termination of the service, the security deposit will be applied to any outstanding charges on the account. Any resulting credit balance shall be refunded to the user.

F. CONDITIONS OF SERVICE

1. General

No person shall use or make a connection to the City's recycled water facilities without first obtaining a Recycled Water User Permit. Such permit shall be in addition to any and all permits and conditions required by Federal, State, or local regulatory agencies.

Service will be provided within the City's Water Service Area which is contiguous to existing recycled water distribution lines for the uses specified herein. Service will be provided to property not contiguous to existing distribution lines if the distribution line is extended to the applicant's property as provided below.

2. Service Connection

- a. The PUD reserves the right to determine the size of the service line(s), the service location and conditions of backflow prevention assembly(s) for potable water service protection, in accordance herewith, and any and all other appurtenances to the service. The service line(s) shall be installed to a curb line or within a public right of way, abutting upon a public street, highway, alley, easement, lane or road (other than a freeway) in which are installed recycled water mains of the City.
- b. The PUD reserves the right to limit the area of land to be supplied by one service connection to one ownership. A service connection shall not be used to supply adjoining property of a different owner unless approved by the PUD.
- c. All recycled water use shall be metered, and all recycled water used on any premises where a recycled water meter is installed must pass through said meter. Users shall be held responsible and charged for all recycled water passing through the meters, unless otherwise specified.
- d. When property provided with a service connection is subdivided, such connection shall be considered as serving the lot or parcel of land that it directly or first enters. Additional mains and/or recycled water service lines will be required for all subdivided areas in accordance with these Rules.

3. Limitations of Service

- a. The City shall not be liable for any damage by recycled water, or otherwise resulting from inadequate capacity, defective plumbing, broken or faulty services, or recycled water mains; or any conditions beyond the control of the City. All applicants for recycled water service shall accept such conditions of pressure, as provided by the distribution system at the location of the service connection and to hold the City harmless from all damage arising from low pressure or high pressure conditions, or from interruptions of service.
- b. The City is not responsible for any condition of the recycled water itself, or any substance that may be mixed with or be in recycled water as delivered to any user, except as required by Title 22.
- c. All recycled water service will be on an interruptible basis, depending on the quantity and quality of the recycled water available, in accordance with the terms of the individual service agreement between the City and the user.

4. Relocation of Recycled Water Service Line

Should a service installed pursuant to the request of the applicant, owner, or customer be of the wrong size or installed at a wrong location or depth, the cost of relocation or removal shall be paid by the applicant, owner or customer. All services provided prior to final street improvements shall be considered temporary and the costs for all repairs or

changes required to be performed by the PUD shall be paid by the applicant, owner or customer.

5. Scheduling Recycled Water

The City reserves the right to control and schedule the use of recycled water if, in the opinion of the City, scheduling is necessary for purposes including, but not limited to, the maintenance of an acceptable working pressure in the recycled water system and providing for reasonable safeguards in relation to public health.

6. Emergency Connections to Potable Water System

If, in the opinion of the City, an emergency exists whereby recycled water is not available, the Program Specialist may approve a temporary supply from the potable water system, delivered through an approved air-gap separation to the recycled water piping which complies with the requirements of Sections 7602(a) and 7603(a) of Title 17.

G. SERVICE CONTINUATION

1. General

All offsite recycled water facilities and all onsite recycled water facilities shall be designed and constructed according to the requirements, conditions, and standards as adopted and revised by the Board from time to time, which documents are open for inspection in the UD office, and by this reference are incorporated herein.

2. Offsite Recycled Water Services

Operation and surveillance of all of the City's offsite recycled water system facilities, including, but not limited to recycled water pipelines, reservoirs, valves, connections, supply interties, and other appurtenances beginning at the PUD service connection meter at the RWQCP and ending at the point of connection with the customer's facilities, shall be under the management and control of the PUD. No other persons except authorized employees of the PUD shall have any right to enter upon, inspect, operate, adjust, change, alter, move, or relocate any portion of the foregoing, or any of the City's property. If such should occur, all charges and penalties shall be applicable and collected. Such action may also be in violation of any and all applicable Federal, State, and local statutes, ordinances, regulations, and other requirements and subject to a service turn-off.

3. Onsite Recycled Water Services

a. The operation and maintenance of onsite recycled water distribution facilities are the responsibility of the applicant, owner, or customer.

b. The operation and maintenance of all onsite recycled water system facilities, including but not limited to landscape irrigation systems, agricultural irrigation systems,

systems utilized in relation to use of recycled water for industrial process or construction purposes, or recreational impoundment systems using the City's recycled water, shall be under the management of a Supervisor designated by the applicant, owner, or customer and approved by the PUD. Designated duties of the Supervisor include the responsibility for the cross-connection control program on the water user's premises. This Supervisor shall review the installation and revision of pipelines and equipment to assure that there are no cross-connections. The PUD may, from time to time, require that a Supervisor obtain instruction in the use of recycled water, such instruction being provided by or approved by the PUD. The Supervisor shall report to the City and local health department any incident of backflow of recycled water into the potable water system within 24 hours of the incident.

c. The PUD shall monitor and inspect the onsite recycled water system, and for these purposes shall have reasonable access. Where necessary, keys and/or combinations shall be issued to the PUD to provide such access.

d. The applicant, owner, or customer shall have the following responsibilities in relation to operation of onsite facilities:

1.To make sure that all operations personnel are trained and familiarized with the use of recycled water.

2.To furnish their operations personnel with maintenance instructions, irrigation schedules, and as-built drawings to ensure proper operation in accordance with the onsite facilities design and these Rules.

3.To prepare and submit to the City one (1) set of as-built drawings on mylar.

4.To notify the PUD of any and all updates or proposed changes, modifications, or additions to the onsite facilities, which changes shall be approved by the PUD and shall be designed and constructed according to the requirements, conditions, and standards set in these Rules. Changes, modifications or additions must be submitted to the PUD for plan check and approval prior to construction. The construction shall be inspected by the PUD, and revised as-built drawings and controller charts shall be approved by the PUD.

5.To operate and control the system in order to prevent direct human consumption of recycled water and to control and limit runoff. Operation and control measures of specific prohibitions shall include but not be limited to the following:

(a) Runoff Conditions - Conditions that directly or indirectly cause a runoff outside of the approved use area, whether by design, construction practice, or system operation, are strictly prohibited. Sprinkler head alignment shall not allow spray to be directed outside the boundaries of the approved use area.

(b) Windblown Spray Conditions - Conditions that directly or indirectly permit windblown spray to pass outside of the approved use area, whether by design, construction practice, or system operations, are strictly prohibited.

(c) Unapproved Uses - Use of recycled water for any purposes other than those explicitly approved in the currently effective user permit issued by the PUD and without the prior knowledge and approval of the appropriate regulatory agencies is strictly prohibited.

(d) Cross-Connections - Cross-connections, as defined herein and by Title 17, resulting from the use of recycled water or from the physical presence of recycled water service, whether by design, construction practice, or system operation, are strictly prohibited. A detected cross-connection will result in an immediate termination of both the potable water service and the recycled water service until the cross-connection is located and eliminated to the satisfaction of the PUD Program Specialist.

(e) Hose Bibs - Use or installation of hose bibs on any onsite irrigation system presently operating or designated to operate with recycled water, regardless of the hose bib construction or identification, is strictly prohibited.

(f) Unprotected Public Facilities - Facilities that may be used by the General Public including, but not limited to, eating surfaces and playground equipment, and located within the approved use area designated by the user permit, shall be protected by an appropriate separation from contact with recycled water, whether by windblown spray or by direct application through irrigation or other approved use. Lack of such protection, whether by design, construction practice, or system operation, is strictly prohibited.

(g) Unprotected Drinking Fountains - Any and all drinking water facilities located onsite shall be protected from direct or windblown recycled water spray.

(h) Fire Hydrants - Use or installation of fire hydrants on any onsite system that is in current use or is designed to operate with recycled water, regardless of the fire hydrant construction or identification, is strictly prohibited.

(i) Ponding - Irrigation with recycled water should be controlled to prevent ponding and runoff unless approved by the City, otherwise it is strictly prohibited.

(j) Periods of Operation - The operation of the irrigation system shall be during periods of minimal use of the approved use area by the general public. Such periods of operation shall remain within any general period of recycled water irrigation operation specified by the City. Irrigation should be restricted to times when the area has least human contact.

6.To ensure that the recycled water facilities remain in compliance with these Rules.

7. To comply with any and all applicable Federal, State, and local statutes, ordinances, regulations, contracts, rules and regulations, and all requirements prescribed by the City. In the event of violation, all charges and penalties shall be applied and collected.

4. Meter Testing

If a recycled water meter fails to register during any period, or is known to register inaccurately, the customer shall be charged with an average daily consumption at the same season shown by the reading of the meter when in use and registering accurately. Any customer may demand that the meter through which recycled water is being furnished be examined and tested by the PUD for the purpose of ascertaining whether or not it is correctly registering the amount of recycled water being delivered through it. Such demand shall be in writing and shall be accompanied by a deposit equal to the potable bi-monthly service fee for a same sized meter.

Upon receipt of such demand and deposit, the PUD will have the meter examined and tested and, if upon such test the meter shall be found to register over two percent (2%) more water than actually passes through it, the meter shall be properly adjusted or another meter substituted therefor, the deposit shall be returned, and the recycled water bill for the current month will be adjusted proportionately. If the meter should be found to register not more than two percent (2%) more water than actually passes through it, the deposit shall be retained by the PUD to offset the expense of making the test.

5. Records

The user shall maintain as-built drawings of the use area showing all buildings, domestic and recycled water facilities, the sewage collection system, etc. Drawings shall be updated as modifications are made. The user shall keep a copy of the drawings on site and present them to the City as needed.

H. PROTECTIVE MEASURES

1. General

Recycled water may be used for any purpose permitted by Federal, State and local regulations provided that all such use is in accordance with these Rules and the City's NPDES Permit (Regional Board Order No. 95-18-NPDES-CA-0105350) and provided further that:

a. The design and construction of the recycled water system shall be approved by the PUD.

b. The applicant shall execute a service agreement to receive such water and use it only for approved purposes.

c. Violation of permit conditions will result in a notice of violation, fines and/or termination of service, depending on the severity of violation.

2. System Design Requirements

a. Recycled water distribution and transmission system piping shall comply with the design requirements contained in the California-Nevada Section AWWA publication "Guidelines for Distribution of Recycled Water" and AWWA publication "Dual Water Systems (M-24)."

1. All piping, valve boxes, valves and outlets shall be marked to differentiate recycled water from domestic or other water using purple piping, Pantone #512, or purple labeling.

2. All recycled water controllers and valves shall be appropriately tagged to warn the public and employees that the water is not safe for drinking.

b. All recycled water valves, outlets, quick couplers, and sprinkler heads shall be of a type or secured in a manner that only permits operation by personnel authorized by the user.

c. Notification shall be provided to inform the public that recycled water is being used. The notification shall include the posting of conspicuous warning signs with proper wording of sufficient size to be clearly read.

d. An air-gap separation or reduced pressure principle device as determined by the Program Specialist shall be provided at all domestic water service connections to properties having a recycled water service connection.

e. There shall be no connection between the potable water supply and piping containing recycled water.

f. Adequate measures shall be taken to prevent the breeding of insects and other vectors of health significance, and the creation of odors, slimes or unsightly deposits.

g. There shall be at least a 10-foot horizontal and 1-foot vertical separation (with the domestic water above the recycled water pipeline) between all pipelines transporting recycled water and those transporting water supplied from the domestic system.

h. In special cases where a 10-foot horizontal separation is not practical, the domestic water piping shall be encased with concrete using a 2-sack sand-cement slurry. Concrete dimension shall be a minimum of 12" above and on each side of the pipeline. Approved 3" width marking tape, labeled "DOMESTIC WATER" shall be placed the entire length of the piping on top of the concrete encasement and at a depth of 6" below the finished grade centered on the pipeline.

3. System Layout

The irrigation system shall be designed to prevent discharge onto certain areas that are not approved for use. Part-circle sprinklers shall be used adjacent to roadways and boundary lines to confine the discharge from the irrigation system to the approved use area.

The system design shall avoid spray patterns that include obstructions that tend to concentrate recycled water to produce ponding and/or runoff, such as spraying against bridge abutments and outlet structures.

4. System Control Devices

The system shall include automatic system control devices that can be programmed to prevent the ponding and/or runoff of recycled water. These devices shall include automatic controllers, valves and associated equipment. The devices shall be designed so that, if the current application program is producing any runoff, they can be readily programmed on site to prevent such occurrences.

5. System Operation

a. The Owner shall notify the Utility in writing if the Supervisor named on the permit for recycled water service is changed.

1. The Supervisor shall be aware of the entire system within his or her responsibility and of all applicable conditions of recycled water use. The Supervisor shall be responsible for installation, operation and maintenance of pipelines and backflow prevention connection equipment.

2. The Owner/Supervisor shall be responsible for the operation and surveillance of onsite recycled water distribution facilities to avoid cross-connections. Cross-connection between the potable water system and the recycled water system shall not take place under any circumstances.

b. The Owner/Supervisor shall maintain the irrigation system properly so as to minimize failures and to repair broken valves, pipes and sprinklers in a timely fashion.

c. The Owner/Supervisor shall educate occupants, residents and maintenance personnel on a continuing basis to be sure they understand the proper use of recycled water.

d. The Owner/Supervisor shall prevent people from drinking and minimize the contacting of recycled water.

6. System Identification

a. Each location of a recycled water outlet must be identified and marked with a conspicuous warning label. The label or sign shall be a size no less than 4 inches by 8 inches and shall include the following wording: "RECYCLED WATER – DO NOT DRINK." Signage shall be in Spanish, as well as in English, and shall include the universal symbol for "DO NOT DRINK."

b. All pipes, valves, and other appurtenances installed above the ground, that are designed to carry recycled water, shall be painted and maintained a purple color, Pantone color #512.

c. All pipes, valves, and other appurtenances installed below the ground, that are designed to carry recycled water, shall be colored purple. PVC pipe manufactured with an integral purple color shall be marked on opposite sides to read "CAUTION: RECYCLED WATER - DO NOT DRINK" in intervals not to exceed three feet.

7. Inspection Procedures

Coverage Inspection. An inspection is made annually to determine the adequacy of the recycled system in meeting the health and safety concerns. The coverage inspection reviews concerns of over spray, misting, ponding, runoff, color coding and signage. The Department of Environmental Health or the Program Specialist should be involved in the coverage test and inspection since it directly relates to the protection of public health and safety.

Cross-connection Inspection. For sites having both a potable and recycled distribution system, the method of testing is to follow a procedure, approved by the State Health Department and conducted by the Program Specialist with oversight by the local and state health department.

a. A site walk-through and record check will be performed annually to verify the lack of discoverable cross-connections.

b. An initial and subsequent cross-connection verification inspection and test shall be performed at least every four years on both the potable and recycled water systems using one of the procedures as follows:

1. Methods for conducting the cross-connection verification test:

(i) Shut down test with pressure recorders on both the potable and recycled service connections.

(ii) Shut down test by observing each outlet on both the potable and recycled service connections.

(iii) Shut down test using a TDS concentration testing of each outlet on both the potable and recycled service connections.

(iv) Shut down test using a TDS concentration testing of each hose bibs connection for sites with occupied residences.

(v) Exposing and visual inspection of all potable water lines on new construction sites.

(vi) Dye testing for sites where it is inconvenient to conduct a shut down test.

(vii) Uniform Plumbing Code test for dual plumbing inside building structures.

2. In the event that a cross-connection is discovered, the following procedure, in the presence of the Program Specialist, shall be activated immediately:

(i) Recycled water piping to the premises shall be shut down at the meter, and the recycled water piping shall be drained.

(ii) Potable water piping to the property shall be shut down at the meter.

(iii) All cross-connections shall be uncovered and disconnected.

(iv) The systems shall be retested following procedures listed in subsection (b)(2) above.

(v) The potable water system shall be chlorinated with fifty (50) ppm chlorine for twenty-four (24) hours.

(vi) The potable water system shall be flushed and after twenty-four (24) hours, a standard bacteriological test shall be performed by a certified water testing lab. If test results are acceptable, the potable water system may be reactivated.

The Department of Environmental Health Officer or their designated appointee may substitute for the Program Specialist in the inspections and tests.

I. ENFORCEMENT

1. Notice of Violation

Any person, firm, corporation, association, or agency found to be violating any provision of these Rules, or the terms and conditions of the user's service agreement, permit, or any applicable Federal, State, City or local statutes, regulations, guidelines, ordinances, or other requirements will be served by the PUD with written notice of non-compliance stating the nature of the violation and providing a reasonable time limit, as determined by the City, for the satisfactory correction thereof. This provision is in addition to, and not

by way of derogation of, any other remedies or procedures available to the City by law, regulation, or pursuant to any of the provisions of these Rules.

Notice of violation procedure shall be in addition to any other remedies available to the City, including the provisions set forth in the Water Recycling Law (California Water Code Section 13500 et seq.).

2. Non-compliance Following Notice of Violation

Failure to cease all violations within the stated time limit shall result in revocation of the permit by the Board and termination of recycled water service. At the discretion of the Board, violations regarding any one service may result in termination of recycled water service in the following manner:

- a. **Interim Revocation:** In cases where the serious nature of the violations require immediate action, the Board may, at its discretion, immediately revoke the permit on an interim basis and thereupon cease recycled water service, subject to a timely decision on a permanent revocation of the permit, pursuant to a public hearing as provided herein.
- b. **Permanent Revocation:** Permanent revocation of a permit shall occur only subsequent to a public hearing held in the manner hereinafter provided. The user shall be given written notice of violation ten (10) consecutive calendar days prior to a hearing on the possible permanent revocation of a permit by the Board. The notice shall specify the grounds of the proposed permanent revocation of such permit in reasonable detail and it may elect to suggest corrective actions acceptable to the Board. Notice may be delivered personally to the user or it may be given by deposit in the United States mail with postage prepaid, return receipt requested, addressed to the user as reflected in the records of the City, or addressed to the owner as shown on the last equalized assessment roll of the County, as defined in the Revenue and Taxation Code of the State of California. Any such action to permanently revoke the permit shall be effective immediately after notice of the Board's decision and shall be either personally delivered to the user or placed in the United States mail, postage prepaid, return receipt requested, addressed to the user in the manner hereinabove specified.
- c. **Re-establishment of Service:** Any request to re-establish service subsequent to the permanent revocation of a permit and the termination of recycled water service, shall be in the manner prescribed for initially obtaining recycled water service from the PUD, which may include the collection of a security deposit. However, in addition, the PUD may, at its discretion, require that a service agreement, approval of a new Project Report and financial security conditioned upon compliance with the Rules be provided in an amount, manner and for a period of time as determined by the PUD.

The PUD shall have the right to refuse to re-establish service following permanent revocation of a permit for violations of these provisions.

Re-establishment of service shall only be made during regular working hours established by the PUD.

- d. Delinquency: Disconnection of service by reason of a delinquent bill shall not automatically constitute revocation of a permit. However, such delinquency may be considered as sufficient reason for a revocation of permit, in accordance with the provisions of these Rules.
- e. Provisions: The continuing satisfaction of the requirements of these Rules is an on-going condition of service.
- f. Objections: The user may file a notice of objection with the PUD within sixteen (16) days after notice of violation is given or mailed to the owner. The objection must be in writing and specify the reasons for the objection. The preliminary determination shall be made, with the user able to appeal this determination in a process established by the Board. The decision resulting from the appeal process shall be final.
- g. Appeals: Appeals on any ruling of the Board concerning violations of the provisions or penalties provided for in these Rules shall be in writing requesting for reconsideration within sixteen (16) days of receiving the result of the preliminary determination. The Board may grant the user an opportunity to present additional oral or documentary information, or it may decide on the basis of information filed in connection with the objection/appeal. The Board shall respond within sixteen (16) days of receipt of the appeal, with a decision whose findings shall be final.
- h. Conflicts: If there is any conflict between the provisions of these Rules and the provisions of any other applicable laws or regulations, the most restrictive requirement shall control and prevail, as determined by the city.

CITY OF RIVERSIDE RECYCLED WATER SERVICE

GENERAL NOTES

System Operation

1. Irrigated areas of human contact - parks, playgrounds, school yard and golf courses during the late night/early morning hours.

2. Prevent washing of food or eating utensils in recycled water.

System Installation

1. Hose bibs are not permitted on the recycled water irrigation system.

2. Provide a physical separation barrier between areas irrigated with recycled water and areas irrigated with potable water.

3. Each of the recycled water system, the potable water system and any other separate water system, shall be provided with appropriate drain valving and air vacuum valves to allow the deactivation and draining of each water system.

System Identification

1. All on-site potable water lines and recycled water lines must have distinguishing identification.

- a. The warning tape for the newly installed potable water piping must be approved 3" width marking tape, labeled "DOMESTIC WATER" centered 12 inches above the entire length of the piping. The warning tape for the recycled water piping must also be centered 12 inches above the entire length of the piping. The recycled water warning tape must be purple in color, Pantone color #512, having a minimum of 3" in width with the words "CAUTION: RECYCLED WATER - DO NOT DRINK" printed in ½ " high, black, uppercase letters.

2. All new buried recycled water distribution piping, including service lines, valves and other appurtenances shall be either embossed or integrally stamped/marked colored purple, Pantone color #512, "CAUTION: RECYCLED WATER - DO NOT DRINK."

3. Outlets for the recycled water must be identified and marked with a conspicuous warning label. The label or sign shall be a size no less than 4 inches by 8 inches, that include the following wording: "RECYCLED WATER - DO NOT DRINK." Signage shall be in Spanish, as well as in English, and shall include the universal symbol for "DO NOT DRINK."

SERVICE INTERACTIONS

The following interaction with the City can occur during the obtaining and ongoing administration of recycled water service. Interactions for irrigation and construction use may differ. Interactions are listed in the order of normal occurrence.

1. Preliminary Investigation

Applicant meets with the PUD to establish potential service locations and service pressures for proposed site. Areas that may receive recycled water and areas that must receive potable water are established. See Subsection D.2.

2. Application Submittal

Applicant completes and submits to the PUD the application form and onsite usage plan showing proposed areas to receive recycled water, proposed service locations, meter size, size and location of offsite facilities that would provide service, and any other specific call-outs regarding recycled water use. See Subsection D.3.

3. Recycled Water User Permit Issuance

The City reviews the application form and Project Report and if acceptable, submits copies to the RWQCB for their review and approval. The PUD concurrently submits copies to state and county health departments for their review and approval. If regulatory review of application is successful, the PUD issues a Recycled Water User Permit with assigned accounting number. See Subsection D.4.

4. Plan Submittal

Irrigation designer prepares plans and specifications and submits three copies to the City for review. Designer concurrently submits additional required information along with construction cost estimate to establish plan review and inspection fee. Plan review and inspection fee is paid to the PUD. Plans must be approved prior to facilities installation. Construction water user prepares and submits location drawing to the PUD for review. Operator concurrently submits materials list to the PUD for approval prior to construction of water facility installation. See Subsection D.5.

5. Construction Schedule

The contractor submits facilities installation schedule to the PUD in order to initiate the inspection process. A minimum of 70 hours notice must be given before starting work and before all inspection requirements. See Subsection D.5, G.3 and H.1.

6. Record Document Submittal

Irrigation designer prepares as-built drawings and control charts and submits to the City for review and approval prior to regular service start-up. See Subsections G.3 and G.5.

7. Service Connection

The user makes a request to the PUD to have meter(s) installed. The request for meter(s) must be accompanied by all preliminary and connection fees. See Subsection F.2.

8. Final Inspection

The contractor or user requests the PUD to perform a final inspection after completion of facilities installation and approval of any required record documents. Operational testing is included as part of final inspection after the completion of the shut-down verification using potable water. See Subsection H.7.

9. Service Start-up

User makes a request to the PUD for service start up after final inspection. The City notifies RWQCB of intent to begin service and, upon authorization of RWQCB, the PUD begins regular service after a successful "cross-connection shutdown test" as described in the Project Report. Start-up requests must be accompanied by cash deposit. After start-up, the City confirms service to RWQCB and state and county health departments. See Subsection F.2.

10. System Surveillance

The PUD Program Specialist regularly inspects, at least annually, the offsite and onsite facilities to make sure the system and operation is in conformance with the permit. A written report documenting the results of the inspection shall be submitted to the State Health Department. See Subsection H.7.

11. Reporting

The PUD reports the volume of recycled water consumed by user as part of billing. The City reports the quality of recycled water only upon a specific request by the user. See also Subsection F.3.

12. Violations

The PUD's Program Specialist determines violations of the permit and immediately notifies the onsite Supervisor. Violation constituting immediate public health danger and minor violations not corrected in reasonable time result in service termination by shutting

off meter and locking it. Service resumption must be accompanied by start-up fee. User may appeal determination to the City. See Subsection H.1 and Section I.

Adopted by Board of Public Utilities: June 20, 1997

Approved by City Council: July 8, 1997

Effective Date: August 8, 1997

APPENDIX E.3

Recycled Water Rate

Appendix E.3

City of Riverside
Public Utilities Department

SCHEDULE WA-10

RECYCLED WATER SERVICE

APPLICABILITY:

Applicable to all retail recycled (reclaimed, non-potable) water service for irrigation, commercial or industrial use.

TERRITORY:

City of Riverside and contiguous area.

RATES:

A. Basic Area (Inside City)

<u>Quantity Rates</u> (to be added to Customer Charge)		<u>Per 100 Cubic Feet</u>
Existing Customers Commodity Charge per month		\$0.30
Future Customers Commodity Charge		Contract Rate
<u>Customer Charge</u>		<u>Per Meter, Per Month</u>
1. Existing Customers		
All meter sizes through	4-inch	\$178.93
	6-inch	357.87
	8-inch	572.59
	10-inch	825.24
2. Future Customers		
All meter sizes		Contract Rate

B. Surcharge Area Outside City

Charges shall be the amount computed at the Quantity Rates for Future Customers and the Customer Charge set forth in the Basic Area of this schedule multiplied by 1.5.

SPECIAL CONDITIONS

1. Obligation to Supply Recycled Water

The Water Utility will provide recycled water service under this schedule only when and where such recycled water is available and can be supplied at a reasonable cost in accordance with Water Rule 18.

In determining reasonable cost, the Water Utility may consider all relevant factors, including but not limited to, the present and projected costs of supplying recycled water. Grants or subsidies may be used to reduce total development costs.

2. Continuity of Service and Water Quality

There is no guarantee of continuous service nor uniform quality of recycled water; therefore, the Customer must have a separate service connection for potable water.

3. Applicability of Rules and Regulations

The applicability and provision of recycled water service under this schedule is subject to rules and regulations adopted from time to time by the Board of Public Utilities, including without limitation Water Rule 18 (Recycled Water Rules).

4. Water Conservation and Reclamation Surcharge

The rates and charges above are subject to a surcharge (Water Conservation and Reclamation Surcharge) as adopted via City Council Resolution No. 20695 on May 25, 2004 and such surcharge as is in effect from time to time. The Water Conservation and Reclamation Surcharge will be applied to the Customer's total water usage charge including without limitation the quantity rates, customer and minimum charge for the applicable billing period.

5. Definitions

a. **Contract Rate.** The Contract Rate shall mean the Commodity Charge for Recycled Water as established under individual recycled water contracts with Future Customers approved by the Board of Public Utilities and approved by the City Council. The Contract Rate shall be calculated to provide for the Utilities recovery of all City funded costs associated with the production, additional treatment,

transmission and distribution of recycled water to individual Future Customers, and the general fund transfer.

b. Existing Customers. Existing Customers shall mean those Customers of the Water Utility with a recycle water connection(s) to the City's Off-Site Facilities (as defined in Water Rule 18) and receiving water from the City, as of June 1, 2004.

c. Future Customers. All customers, except for Existing Customers, requesting recycled water from the Water Utility.

ENERGY COST ADJUSTMENT FOR PUMPING WATER:

The Quantity Rates shall be subject to an energy cost adjustment relating to increases and decreases in the cost of electric power for pumping water. This energy cost adjustment shall apply to each one hundred cubic feet (CCF) of sales to which Quantity Rates apply. Determination of the adjustment factor shall be made at the beginning of each quarter, with the initial adjustment beginning February 1, 1983. The energy cost adjustment shall be calculated by dividing the CCF of metered water sold in each quarter into the total dollar amount of fuel cost adjustments plus any base rate increases imposed by power suppliers for pumping water during that quarter:

- A. Fuel cost adjustment charges by Southern California Edison Company.
- B. Fuel cost surcharge charges by City of Riverside.
- C. Base rate increase charges by Southern California Edison Company.*
- D. Base rate increase charges by City of Riverside. *

$$\frac{\$ (A+B+C+D)}{\text{CCF (Metered Sales)}} = \$.0000 \text{ per CCF}$$

The resultant shall be the energy cost adjustment factor for pumping water and shall be expressed in terms of cents per CCF carried out to the nearest \$0.0001. This factor shall be divided by 0.885 to allow for the 11.5% of gross revenue payable to the City General Fund. The resultant shall then become the energy cost adjustment to be multiplied by all CCF increments reported in billings to Customers. The resultant amount in each case, expressed to the nearest \$.01, shall constitute the adjustment to be added to the Customer's bill.

* (Over base rates in effect February 1, 1983)

APPENDIX F.1

2004 Water Quality Report

Appendix F.1

Riverside Public Utilities 2004 Water Quality Report

Primary Standards: Mandatory Health-Related Standards

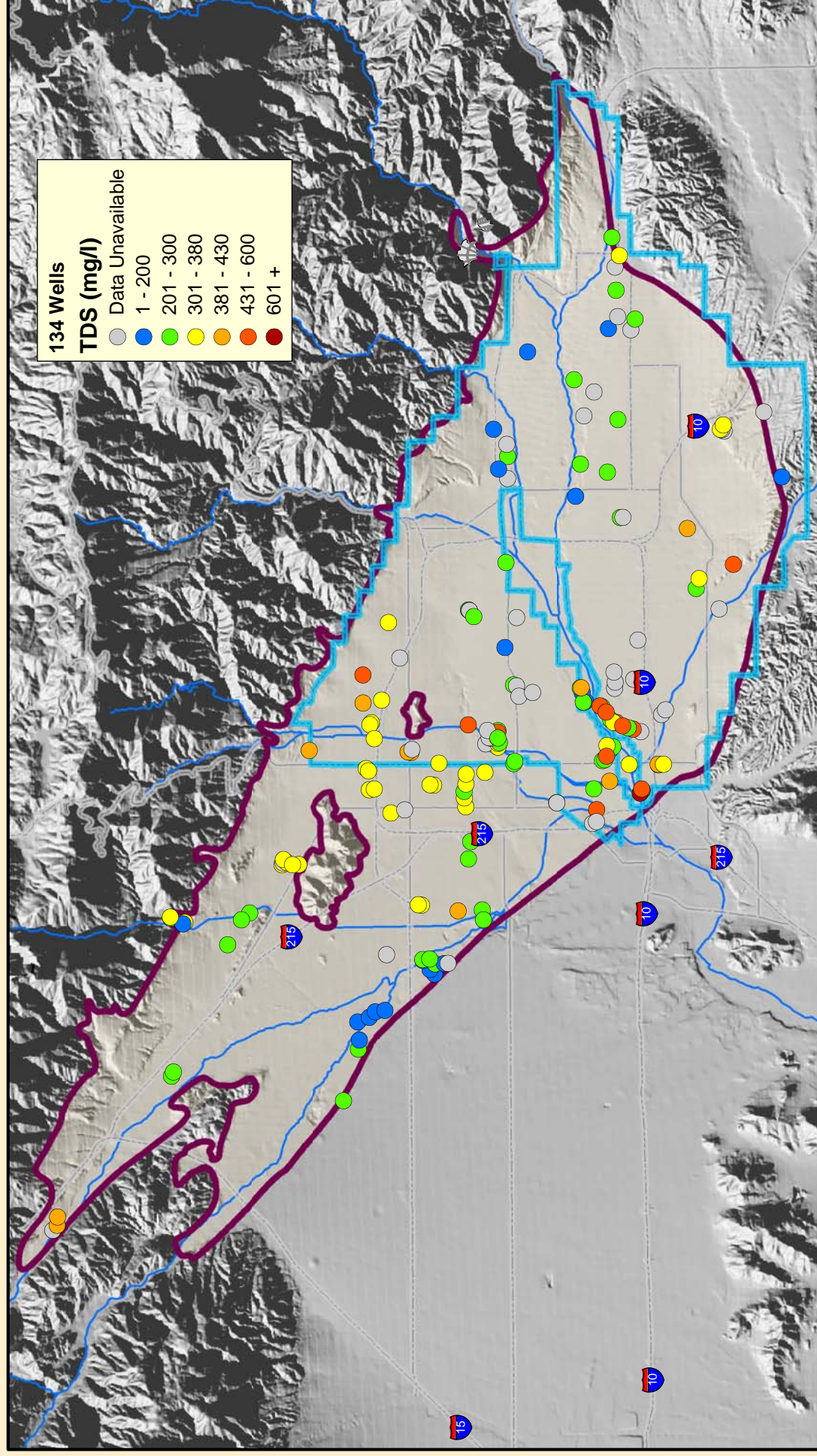
Percent system source - Groundwater 95%

CONTAMINANT	STATE MCL	STATE PHG	RIVERSIDE PUBLIC UTILITIES		SOURCES IN DRINKING WATER
			AVERAGE	RANGE	
Microbiological					
Total Coliform (P/A) (a) -----	5%	0%	0%	0 - 1.1%	Naturally present in environment
Clarity					
Turbidity-----	0.5 NTU	NS	0.1 NTU	0 - 0.4 NTU	Naturally present in environment
Regulated Organic					
Total Trihalomethanes----- "TTHMs"	80 ppb	NS	7 ppb	ND - 54 ppb	By-product of drinking water chlorination
Halocetic Acids "HAA5"-----	60 ppb	NS	1.0 ppb	ND - 10.0 ppb	By-product of drinking water chlorination
Chlorine-----	4 ppm	4 ppm	0.6 ppm	0.4 - 0.9 ppm	Drinking water disinfectant added for treatment
Control of DBP precursors----- Total Organic Carbon "TOC"	Treatment Requirement	NS	0.2 ppm	ND - 1.8 ppm	Various natural and man-made sources
Dibromochloropropane "DBCP" ----	200 ppt	1.7 ppt	11 ppt	ND - 23 ppt	Banned nematocide still present due to past agricultural activities
Trichloroethylene (TCE)-----	5 ppb	0.8 ppb	ND	< 0.5 ppb	Discharge from metal degreasing sites & other factions
Regulated Inorganic					
Nitrate (NO ₃)-----	45 ppm	45 ppm	24 ppm	21 - 25 ppm	Naturally present in environment
Fluoride-----	2 ppm	1.0 ppm	0.6 ppm	0.4 - 0.8 ppm	Naturally present in environment
Arsenic-----	50 ppb	4 ppt	2 ppb	<2 - 4 ppb	Erosion of natural deposits
Radiological					
Gross Alpha-----	15 pCi/L	NS	5 pCi/L	3 - 9 pCi/L	Erosion of natural deposits
Uranium-----	20 pCi/L	0.5 pCi/L	9 pCi/L	6 - 12 pCi/L	Erosion of natural deposits
Lead/Copper (AL) (90% Household Tap)					
Lead (b)-----	15 ppb	2 ppb	<5 ppb	<5 - 7 ppb	Internal corrosion of home plumbing
Copper (b)-----	1,300 ppb	170 ppb	560 ppb	<50 - 710 ppb	Internal corrosion of home plumbing
Additional Monitoring					
Radon*-----	NS	NS	520 pCi/L	490 - 550 pCi/L	Naturally present in environment
Regulated contaminants with no MCLs	ACTION LEVEL	STATE PHG OR MCLG	RIVERSIDE		
			AVERAGE	RANGE	
Chromium VI-----	NS	NS	2.3 ppb	1.5 - 2.7 ppb	
Perchlorate-----	AL 6 ppb	6 ppb	1.7 ppb	<4 - 4.8 ppb	
Vanadium-----	AL 50 ppb	NS	8 ppb	5-12 ppb	
Boron-----	AL 1000 ppb	NS	110 ppb	ND-120 ppb	
* Most recent sampling compiled in 2003					

APPENDIX F.2

Distribution of TDS in Bunker Hill Groundwater Basin

Appendix F.2



Distribution of TDS in Bunker Hill Basin

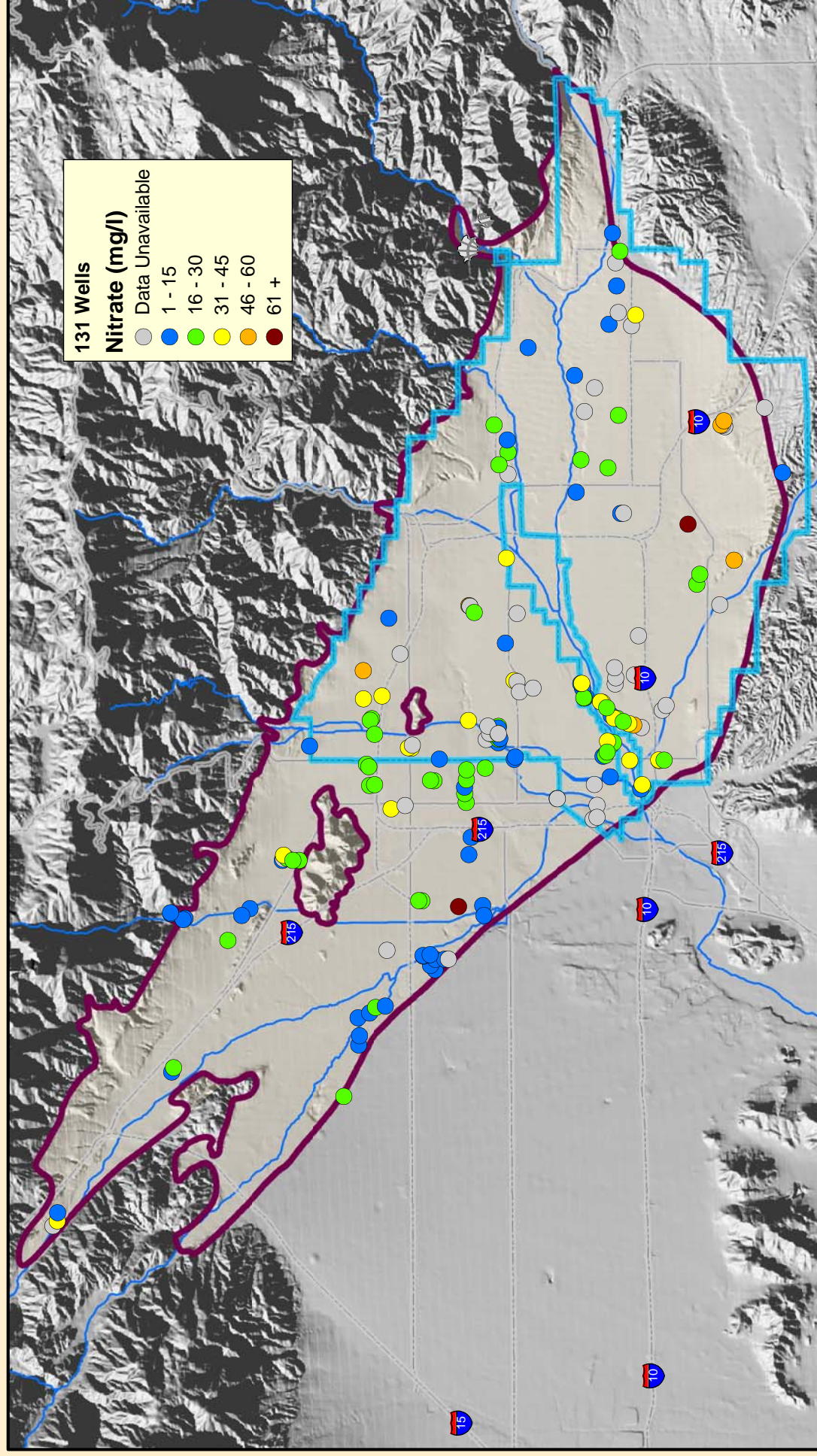


0 0.5 1 2 3 4
Miles

APPENDIX F.3

Distribution of Nitrates in Bunker Hill Groundwater Basin

Appendix F.3



0 0.5 1 2 3 4
Miles

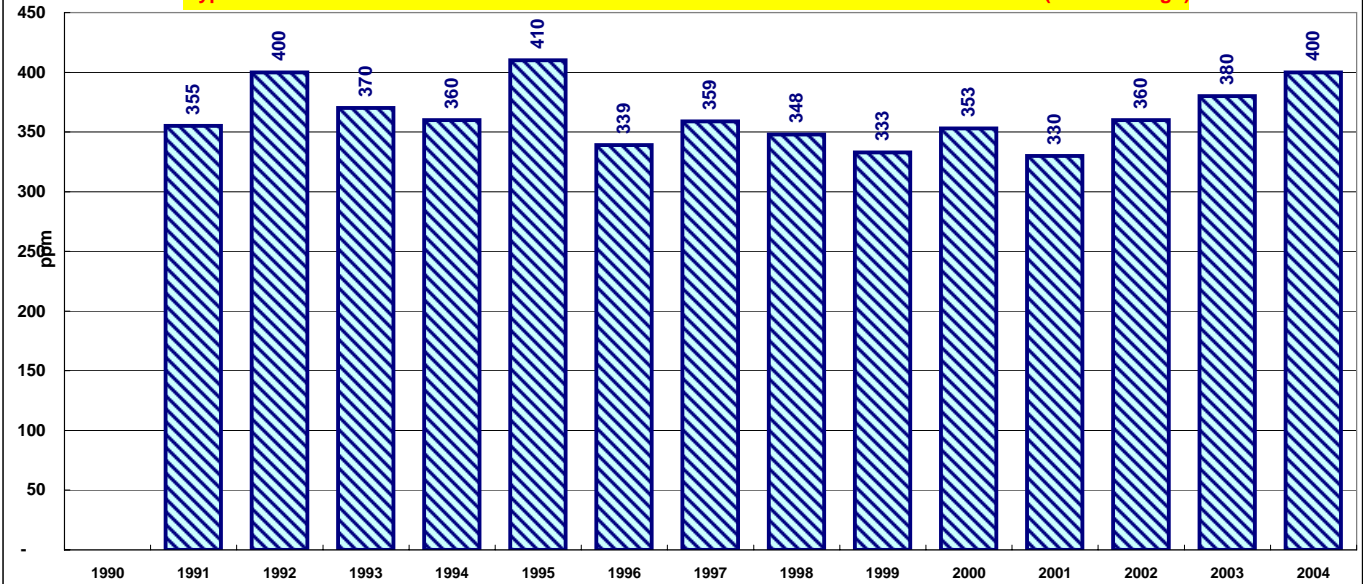
Distribution of Nitrates in Bunker Hill Basin



Appendix F.4 - TDS in RPU wells by Groundwater Basins

Typical TDS Concentration (ppm)																		
SAMPLING LOCATION	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Low	Average	High
Bunker Hill Groundwater Basin																		
GAGE 26-1	520	485	490	535	530	380	507	498	509	506	486	480	470	480		380	491	535
GAGE 27-1	495	495	525	540		490	473	479	477	474	463	450	480			450	487	540
GAGE 27-2	555	555	555	575	550	510	497	498	514	491	501		540			491	528	575
GAGE 29-1	615	585	580	615		530	559	543	546	548	537	570	580			530	567	615
GAGE 29-2	505	500	510	560	480	480		498	498	484	477	470	510			470	498	560
GAGE 29-3	520	515	525	550	590	510		480	458	467	425	450	460	490		425	495	590
GAGE 30-1	235	250	220	170		240	245	250		271	309	350	320	320		170	265	350
GAGE 31-1	215	195	270	220	210	310	314	332	328	324	292	320	290	310		195	281	332
GAGE 46-1	335	265	350	385	330	390	296	332	335	318	341	390	390	430		265	349	430
GAGE 51-1	330	325	360	370	480		293	288	288	301	279	290	290	310		279	323	480
GAGE 56-1	195	220	215	225	200		194	201	189	203	196	220	210	230		189	208	230
GAGE 66-1	290	310	305	300	260	300	265	291	298	309	298	290	290			260	293	310
GAGE 92-1				269	290	310	250	251		245	249	240	220			220	258	310
GAGE 92-2				170	190	150		168	175	174	165		160	180		150	170	190
GAGE 92-3				190	190	220	172	177		153	182	200	200	200		153	188	220
GAGE 98-1										230	215	190	210	210		190	211	230
COOLEY H	225	220	205	220	225	220	194	211	204	226	215	210	210			194	214	226
COOLEY I	235	235	205	225	210	240	205	214	224	251	227	220	220	230	230	205	225	251
GARNER NO. 1	270	225	230	265	250	230	204	203	205	223	223	260		240		203	233	270
GARNER NO. 2	265	265	355	410		280	369		311	339	320	350	330			265	327	410
GARNER NO. 4	270															270	270	270
GARNER NO. 5	260	265	295	315		320	318	317	309	352	357		380			260	317	380
GARNER NO. 6			280	290	340	330	298	310	317	327	342	380	350	380		280	329	380
GARNER NO. 7						270	282	294	261	276			290			261	279	294
HUNT NO. 6	335	360	350		370	330	319	374	396	415	396	370	380			319	366	415
HUNT NO. 10	330	315		335		360	254	352	343	362	357	360	360			254	339	362
HUNT NO. 11	370	355	350	355	360	400	360	393	395	439	413	430	450			350	390	450
MEEKES & DALEY 59	260	235	230	235	290	240	201	225	137	206			320			137	234	320
RAUB NO. 2	240	245	235	255	300	270	254	295	289	285	274	280	260	270		235	268	300
RAUB NO. 3	235	230		235	260	240	258	259	249	249	255	270	300	320		230	258	320
RAUB NO. 4	220	205	235	255	260	310	254	294	272	266	268	300	290	300		205	266	310
RAUB NO. 5	370	360	400	470	400	420	407	396	471	421	397	410	440	470	390	360	415	471
RAUB NO. 6	210	190	245	280	230	240			230	217	217	230	220	270		190	232	280
RAUB NO. 8			170	195		200	193	188	191	194	200	210	220	210		170	197	220
SCHEUER	315	280	280	390	500	300	259		284			390	360			259	336	500
STEWART NO. 20											198		200			198	199	200
STILES	560	555		600	645	590	527	548	503	478		430	430			430	533	645
THORNE NO. 12	265	255	260	280		300	270	306		303	335	350	370	410		255	309	410
WARREN NO. 1	240	225	245	395	220	230	239	269	271	299	301	310	330			220	275	395
WARREN NO. 2	460	560	240	710	830	710	711	879	770	716						240	659	879
WARREN NO. 3	415	380	390	440	420	390		394	467	431						380	414	467
WARREN NO. 4	235	240	250	235	230	270	219	231	228	215	216		220			215	232	270
Riverside North and South Groundwater basins																		
DEBERRY	600	530	520	420	380	450	359	410	368	249	376		400			249	422	600
VAN BUREN NO. 1	545	500	520	495	420	440	388	397		432	339	340	370	350		339	426	545
VAN BUREN NO. 2	525	500	490	480	490	450	368	369	398	337	305		300	350		300	412	525
GARNER B	425	375		435	360		346	346	355	402	425	430	340			340	385	435
GARNER C	375	340	340		320	380	338	338	325	320		340	320			320	340	380
GARNER D		420	355	335	410	380	377	374	345	360		350	340			335	368	420
RUSSELL C										440	402	410	390	430		390	414	440
MOORE-GRIFFITH		390				220	241				348	400	410			220	335	410
PALMYRITA NO. 2																		
TWIN SPRINGS	715	650	590		530	500	504				552	590	570	660	520	500	580	715
ELECTRIC STREET	555	310	555	580	560	600	545	568	572	586		570		620	590	310	555	620
Distribution system blend																		
7TH & CHICAGO		355	400	370	360	410	339	359	348	333	353	330	360	380	400	330	364	410

Typical TDS Concentration of Blended Water downstream of Linden and Evans Reservoirs (7th & Chicago)



APPENDIX F.5

Typical RRWQCP Effluent Quality

Appendix F.5

RWQCP Effluent Monitoring Part I

Constituent	12-month Avg-Limit (mg/l)	12-month Average (mg/l)	# Exceeded	12-month Avg Emission Rate Limit (lbs/day)	12-month Avg Emission Rate Value (lbs/day)
Total Filtrable Residue	650	531	0	216,840	140,629
Total Hardness	275	207	0	91,740	54,797
Chloride	140	88	0	46,704	23,342
Sodium	110	91	0	36,696	24,370
Sulfate	125	85	0	41,700	21,718
Boron	0.75	0.4	0	250	103
Fluoride	1	0.4	0	334	121
Barium	1	0.02	0	334	6
Iron	0.3	<0.10	0	100	<27
Manganese	0.05	<0.02	0	17	<5
Total Inorganic Nitrogen (<i>Note 1</i>)	13	10.1	0	5,004	2,690

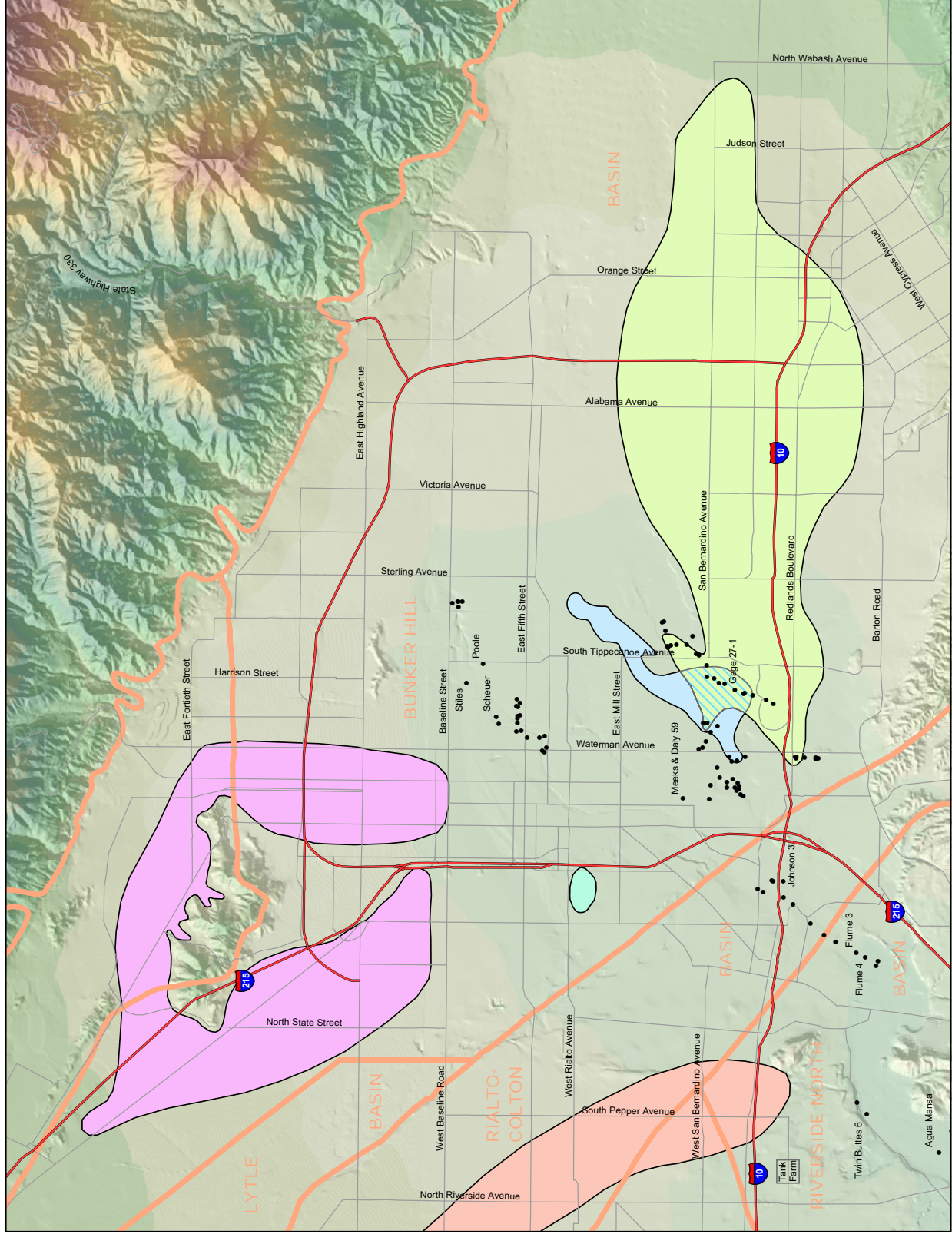
RWQCP Effluent Monitoring on Part II

	Max Daily Limit (µg/l)	Max Daily Value (µg/l)	# Exceeded	Avg Monthly Limit (µg/l)	Avg Monthly Value (µg/l)	# Exceeded
Chromium (VI) *	16	<15	0	11	<15	0
Mercury	2.4	<0.5	0			
Selenium	20	<14	0	5	<14	0
Silver	13.1	<16	0			
Total Recoverable Cadmium	19	<15	0	4.4	<15	0
Total Recoverable Copper	84	22	0	53	19	0
Total Recoverable Lead	1040	<26	0	77	<26	0

	Daily Mass Rate Limit (lbs/day)	Max Daily Mass Rate (lbs/day)	# Exceeded	Avg Monthly Mass Rate Limit (lbs/day)	Avg Monthly Mass Rate (lbs/day)	# Exceeded
Chromium (VI) *	5	<3.8	0	4	<3.8	0
Mercury	0.8	<0.2	0			
Selenium	7	<3.6	0	2	<3.6	0
Silver	4	<4	0			
Total Recoverable Cadmium	6	<3.8	0	1	<3.8	0
Total Recoverable Copper	28	6	0	18	5	0
Total Recoverable Lead	347	<6.6	0	26	<6.6	0

APPENDIX F.6

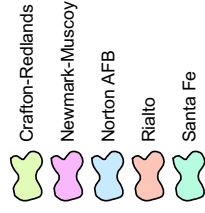
Groundwater Plumes



Legend

- Riverside Well

Plume



Appendix F.6



GROUNDWATER PLUMES

APPENDIX F.7

DHS acceptance letter for WSCP

DEPARTMENT OF HEALTH SERVICES
DRINKING WATER FIELD OPERATIONS BRANCH
1350 FRONT STREET, ROOM 2050
SAN DIEGO, CA 92101
(619) 525-4159
FAX (619) 525-4383

Appendix F.7

APR 27 1999

PUBLIC UTILITIES
REGISTRATION

April 22, 1999

Bill D. Carnahan
Public Utilities Director
City of Riverside
3900 Main Street
Riverside, CA 92522

Subject: City of Riverside, System No. 3310031
Review of System Wide Water Supply Contingency Plan

Dear Mr. Carnahan:

We have completed our review of the March 1999, System Wide Water Supply Contingency Plan, submitted with your April 16, 1999 letter. The Plan and your letter adequately address the issues and concerns expressed in our March 4, 1998 letter.

We appreciate the efforts of the City's staff who worked to put together this Plan. The Plan is comprehensive and does an excellent job of addressing the many water quality issues associated with the City's available sources of water supply. We are well aware of, and greatly appreciate, the complexity of the City's water supply and blending operations. We look forward to working with you and your staff in the future. If there are any questions regarding this letter, please contact Steve Williams or myself at (619) 525-4159.

Sincerely,

Toby J. Roy

Toby J. Roy, P.E.
District Engineer

cc: County of Riverside, Department of Environmental Health
Santa Ana Regional Water Quality Control Board
Kalyanpur Y. Baliga, DHS District Engineer, San Bernardino District

APPENDIX F.8

Septic Ordinance

Appendix F.8

ORDINANCE NO. 6623

AN ORDINANCE OF THE CITY OF RIVERSIDE, CALIFORNIA, AMENDING SECTION 14.08.030 TO PROHIBIT THE INSTALLATION OF SEPTIC TANK SYSTEMS IN CERTAIN DESIGNATED AREAS IN THE CITY AND REQUIRING CONNECTION TO THE PUBLIC SEWER SYSTEM

WHEREAS, the City of Riverside is currently producing approximately fifteen percent of its drinking water supply from the North Orange area in the Riverside Basin and is planning to increase its production substantially from this area; and

WHEREAS, as a requirement under the Safe Drinking Water Act, the Public Utilities Department staff, with guidance and assistance from the California Department of Health Services, conducted a source water assessment for the drinking water wells in the area; and

WHEREAS, in the assessment report, staff identified and ranked the possible contaminating activities in the area and concluded that septic systems were among the activities that pose the greatest threat to the drinking water supply in the area, in that such systems are considered to be potential sources of nitrate, chemicals, and microbial contamination to the wells; and

WHEREAS, because of the abundance of the septic systems upgradient from the City's drinking water wells and potential for rapid expansion of developments with septic systems in the area, the Public Utilities staff proceeded with further evaluation of the potential impacts of the septic system and development of mitigation measures, including hydrogeologic conditions and water quality in the study area, which confirmed that septic systems pose a high risk of contamination to the City's drinking water wells in the area; and

WHEREAS, based upon the recommendations of Public Utilities staff, the City wishes to prohibit the installation of septic tanks to serve new construction in areas where the use of a septic tank poses a potential contamination risk to the City's drinking water wells in the area;

NOW, THEREFORE, BE IT ORDAINED by the City Council of the City of Riverside, California, as follows:

Section 1: Section 14.08.030 is hereby amended as follows:

Section 14.08.030 Connection to public sewer required.

///

1 A. No one shall occupy a house or any other structure in the City or camp or
2 live on any premises within the City, unless such house or other structure or such
3 premises be properly connected to a public sewer whenever the property on which
4 such house, other structure or premises is situated abuts upon a public or private
5 street or alley or other right-of-way in which there exists a public sewer to which
6 connection may be made; provided, however, if a house or structure is served by a
7 satisfactorily functioning septic system, such connection to a public sewer system
8 will not be required until the septic system for such house or other structure fails.

9 B. Anyone desiring to obtain a building permit for an addition to any existing
10 house or structure shall be allowed to use a properly functioning septic system.

11 C. Anyone desiring to obtain a building permit for a new house or structure
12 shall connect to the public sewer system when the property on which such house
13 or structure is situated is not more than one hundred sixty feet from the public
14 sewer and the right-of-way admits such connection, or if the house or structure is
15 located within an area where the use of a septic tank poses a potential
16 contamination risk to the City's drinking water wells in the area, as specified by
17 resolution of City Council. All new houses or structures located within such area
18 must be properly connected to the public sewer system, even if the property on
19 which such house or structure is situated more than one hundred sixty feet from
20 the public sewer and/or the right-of-way must be altered to admit such connection.

21 Section 2: The City Clerk shall certify to the adoption of this ordinance and cause
22 publication once in a newspaper of general circulation in accordance with Section 414 of the Charter
23 of the City of Riverside. This ordinance shall become effective on the 30th day after the date of its
24 adoption.

25 ///

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ADOPTED by the City Council and signed by the Mayor and attested by the City Clerk
this 13th day of August, 2002.

Nancy E. Hart Mayor Pro Tempore
Mayor of the City of Riverside

Attest:

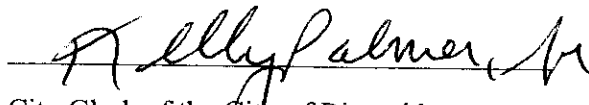
Kelly Palmer, Jr
City Clerk of the City of Riverside

1 I, Colleen J. Nicol, City Clerk of the City of Riverside, California, hereby certify that the
2 foregoing ordinance was duly and regularly introduced at a meeting of the City Council on the
3 23rd day of July, 2002, and that thereafter the said ordinance was duly and regularly
4 adopted at a meeting of the City Council on the 13th day of August, 2002, by the
5 following vote, to wit:

6 Ayes: Councilmembers Beaty, Moore, Defenbaugh, Schiavone, Adkison,
7 Noes: None. Hart, and Pearson.

8 Absent: None.

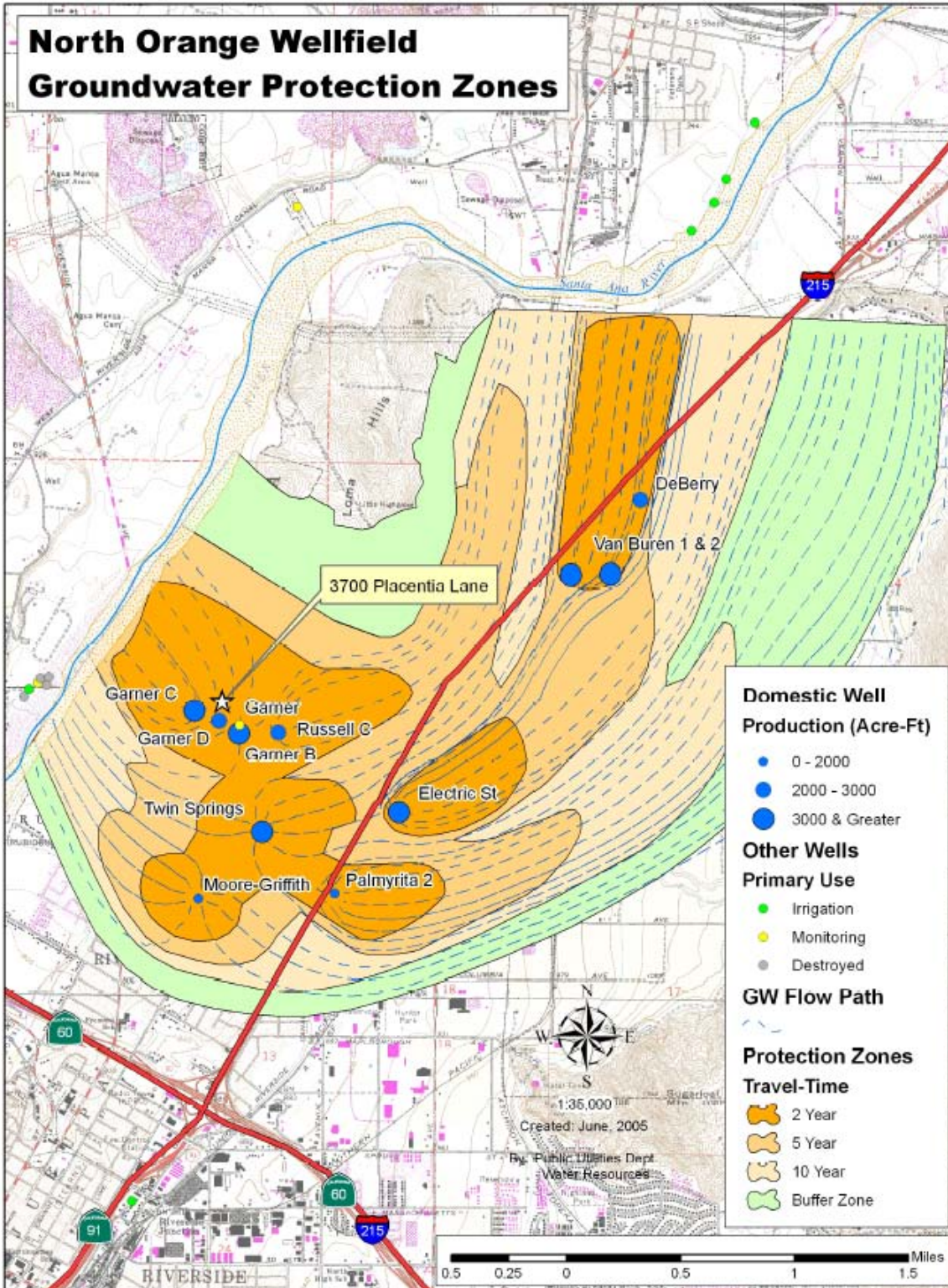
9 IN WITNESS WHEREOF I have hereunto set my hand and affixed the official seal of the
10 City of Riverside, California, this 13th day of August, 2002.

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14 City Clerk of the City of Riverside
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Appendix F.9

Groundwater Protection Zones



APPENDIX G.1

Multiple Dry-Year Supply Capability

for

MWD

Appendix G.1

Multiple Dry-Year Supply Capability¹ & Potential Reserve or Replenishment (Repeat of 1990-92 Hydrology) (acre-feet per year)

	2010	2015	2020	2025	2030
Current Supplies					
Colorado River Aqueduct ²	722,000	699,000	699,000	699,000	699,000
California Aqueduct ³	912,000	912,000	912,000	912,000	912,000
In-Basin Storage	482,000	480,000	463,000	449,000	449,000
Supplies Under Development					
Colorado River Aqueduct	95,000	460,000	400,000	400,000	400,000
California Aqueduct	330,000	215,000	299,000	299,000	299,000
In-Basin Storage	78,000	103,000	103,000	103,000	103,000
Transfers to Other Agencies	0	(35,000)	(35,000)	(35,000)	(35,000)
Metropolitan Supply Capability	2,619,000	2,834,000	2,841,000	2,827,000	2,827,000
Metropolitan Supply Capability w/CRA Maximum of 1.25 MAF⁴	2,619,000	2,776,600	2,741,000	2,719,000	2,719,000
Firm Demands on Metropolitan ^{5,6}	2,376,000	2,389,000	2,317,000	2,454,000	2,587,000
Potential Reserve & Replenishment Supplies	243,000	377,000	424,000	265,000	132,000

¹ Represents supply capability for resource programs under listed year type.

² Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct

³ California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

⁴ Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

⁵ Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted active conservation and local supplies, remaining regional targets for active conservation and local supplies, SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

⁶ Includes projected firm sales plus 70% of projected IAWP agricultural sales

APPENDIX H.1

Water Conservation Incentive Program History

in

Western MWD Service Area

Appendix H.1

Water Conservation Incentive Program History

All Programs in Western's General Service Area

Year	Residential Programs				Residential Water Savings Totals		Year
	Ultra-Low-Flow Toilets		High Efficiency Clothes Washers		(savings in acre feet)	cumulative total	
	unit quantity	water savings(AF)	unit quantity	water savings(AF)	current year		
1995	-	-	-	-	0.0	0.0	1995
1996	2359	82	-	-	82.4	82.4	1996
1997	2450	85.6	-	-	85.6	250.4	1997
1998	1780	62	-	-	62.2	563.1	1998
1999	1708	59.7	-	-	59.7	853.0	1999
2000	1384	48	-	-	48.4	1191.2	2000
2001	1468	51.3	-	-	51.3	1580.8	2001
2002	1914	66.9	204	3.3	70.1	2040.5	2002
2003	2182	76.2	1346	21.5	97.8	2597.9	2003
2004	1892	66.1	2317	37.1	103.2	3258.6	2004

Year	Total Incentive Dollars								Average AF Cost of Water Saved		Year
	by Metropolitan		Third Party Grants		by Local Agency		Totals		(over the estimated life of device)	ULFT (14 years)	
	ULFT	HECW	ULFT	HECW	ULFT	HECW	ULFT	HECW	ULFT (10years)	HECW (14 years)	
1995	-	-	-	-	-	-	-	-	-	-	1995
1996	\$141,540	-	-	-	\$141,540	-	\$283,080	-	\$343.45	-	1996
1997	\$147,000	-	\$48,000	-	\$70,650	-	\$265,650	-	\$310.33	-	1997
1998	\$106,800	-	-	-	\$74,760	-	\$181,560	-	\$291.93	-	1998
1999	\$102,480	-	-	-	\$69,738	-	\$172,218	-	\$288.58	-	1999
2000	\$83,040	-	-	-	\$58,128	-	\$141,168	-	\$291.93	-	2000
2001	\$88,080	-	-	-	\$42,252	-	\$130,332	-	\$254.10	-	2001
2002	\$114,840	\$7,140	-	\$15,300	\$45,378	\$10,545	\$160,218	\$32,985	\$239.58	\$721.84	2002
2003	\$130,920	\$47,110	-	\$100,950	\$44,466	\$28,035	\$175,386	\$176,095	\$230.05	\$584.06	2003
2004	\$113,520	\$81,095	-	\$173,775	\$41,271	\$38,490	\$154,791	\$293,360	\$234.15	\$565.23	2004